

NASA SP-7011 (107)



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AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY

WITH INDEXES

(Supplement 107)

OCTOBER 1972

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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Aerospace Medicine and Biology

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AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 107)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in September 1972 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*



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INTRODUCTION

This Supplement of *Aerospace Medicine and Biology* (NASA SP-7011) lists 353 reports, articles, and other documents announced during September 1972 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes—subject and personal author—are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1972 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

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Documents Announced Between July 1970 and July 1972. All documents with accession numbers between N70-27805 and N72-22990 are sold at the previously announced standard price, whether printed copy or facsimile is supplied. If "Avail: NTIS" appears in the citation, the document is sold at \$3.00. Any other price is shown in the citation.

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TABLE OF CONTENTS

	Page
IAA Entries (A72-10000)	407
STAR Entries (N72-10000)	431
Subject Index	I-1
Personal Author Index	I-35

TYPICAL CITATION AND ABSTRACT FROM STAR

NASA SPONSORED DOCUMENT		AVAILABLE ON MICROFICHE
NASA ACCESSION NUMBER	N72-10072*#	CORPORATE SOURCE
TITLE	Scientific Translation Service, Santa Barbara, Calif.	
AUTHOR	FURTHER STUDIES ON THE RELATION BETWEEN MITOCHONDRIA AND GLYCOLYSIS [WEITERE UNTERSUCHUNGEN UEBER DIE BEZICHUNG ZWISCHEN MITOCHONDRIEN UND GLYKOLYSE]	PUBLICATION DATE
CONTRACT OR GRANT	E. J. Schneider, A. Graffi, H. Bielke, and L. Venker Washington NASA Nov. 1971 4 p refs Transl. into ENGLISH from Naturwissenschaften (W. Berlin), v. 44, 1957 p 446 (Contract NASw-2035)	AVAILABILITY SOURCE
REPORT NUMBER	(NASA-TT-F-14034) Avail: NTIS CSCL ORE	COSATI CODE
	The relation between mitochondria and glycolysis is studied. It is found that mitochondria influences glycolysis even when glucose alone is used as the substrate, and not combined with ADP.	
	Author	

TYPICAL CITATION AND ABSTRACT FROM IAA

NASA SPONSORSHIP		
IAAA ACCESSION NUMBER	A72-10818 *	
TITLE	Foundations of planetary quarantine. L. B. Hall (NASA, Washington, D.C.) and R. G. Lyle (Exotech Systems, Inc., Washington, D.C.) (Environmental Biology and Medicine, vol. 1, (1971, p. 5-8.) In: Planetary quarantine: Principles, methods, and problems. (A72-10817 01-05) New York, Gordon and Breach, Science Publishers, Inc., 1971, p. 5-8. 10 refs. Contract No. NSR-09-010-027.	AUTHORS
TITLE OF PERIODICAL	Discussion of some of the problems in microbiology and engineering involved in the implementation of planetary quarantine. It is shown that the solutions require new knowledge in both disciplines for success at low cost in terms of both monetary outlay and man's further exploration of the planets. A related problem exists in that engineers are not accustomed to the wide variation of biological data and microbiologists must learn to work and think in more exact terms. Those responsible for formulating or influencing national and international policies must walk a tightrope with delicate balance between unnecessarily stringent requirements for planetary quarantine on the one hand and prevention of contamination on the other. The success of planetary quarantine measures can be assured only by rigorous measures, each checked, rechecked, and triple-checked to make sure that no errors have been made and that no factor has been overlooked.	AUTHORS' AFFILIATION
		PUBLICATION DATE
		CONTRACT, GRANT, OR SPONSORSHIP
	M.V.E.	



AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 107)

OCTOBER 1972

IAA ENTRIES

A72-34221 Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation. J. T. Willerson, J. A. Kastor, R. E. Dinsmore, E. Mundth, M. J. Buckley, W. G. Austen, and C. A. Sanders (Massachusetts General Hospital; Harvard University, Boston, Mass.). *British Heart Journal*, vol. 34, June 1972, p. 561-568. 9 refs. PHS-supported research.

Results of certain noninvasive studies done on 30 patients after mitral valve replacement are reported, and clues aiding in the recognition of mitral paravalvular and intravalvular regurgitation are indicated. The noninvasive techniques employed were phonocardiograms, apex cardiograms, carotid arterial pressure tracings, and electrocardiograms. The patients were divided into three groups: (1) those showing either mitral paravalvular or intravalvular regurgitation, (2) those having clinically normal mitral prosthetic function, and (3) those showing no clinical evidence of paravalvular regurgitation, but with clinical evidence of severe left ventricular failure. Results show that the interval from aortic closure to opening click of mitral prosthesis was significantly reduced in patients with MPR. There was significant shortening of left ventricular ejection time when all the patients with paravalvular regurgitation were compared with all patients with normal prosthetic mitral valve function. Typical third heart sounds were not recorded in any of the 30 patients with mitral prostheses, regardless of whether paravalvular regurgitation or severe left ventricular failure were present. D.F.L.

A72-34222 Blood coagulation changes at high altitude predisposing to pulmonary hypertension. I. Singh and I. S. Chohan (Armed Forces Medical Services, New Delhi, India). *British Heart Journal*, vol. 34, June 1972, p. 611-617. 28 refs.

A study was carried out with 38 Indian soldiers, normally plains residents, but stationed at altitudes between 12,000 to 18,000 feet for 2 years. The purpose of the study was to determine the effect of blood coagulation on predisposition to pulmonary hypertension. Six of the subjects developed high altitude pulmonary hypertension by the end of two years, whereas the remaining 32 showed no clinical or other signs of the affliction. These latter served as controls in the study. Sixteen other soldiers, who had remained at sea level, were used as sea-level controls. Compared with the sea-level controls, the six soldiers who developed pulmonary hypertension showed a significant increase of plasma fibrinogen, fibrinolytic activity, platelet adhesiveness, platelet factor 3, factor V, and factor VIII. The remaining 32 subjects showed significant increase in plasma fibrin-

ogen and fibrinolytic activity only. These results indicate that high altitude pulmonary hypertension is of occlusive origin, and is independent of changes in blood coagulation at high altitude. D.F.L.

A72-34247 Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions. T. D. Creighton, R. C. Tees, and D. E. Creighton (British Columbia University, Vancouver, Canada). *Canadian Journal of Psychology*, vol. 26, June 1972, p. 127-139. 26 refs. Defence Research Board Grant No. 9425-23; National Research Council Grant No. APA-179.

A72-34248 Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. B. Christie, G. Delafield, B. Lucas, M. Winwood, and A. Gale (Exeter University, Exeter, Devon, England). *Canadian Journal of Psychology*, vol. 26, June 1972, p. 155-170. 18 refs. Medical Research Council Grant No. G-969/185/C.

A72-34249 Vision and touch - A reconsideration of conflict between the two senses. P. M. McDonnell and J. Duffett (New Brunswick University, Fredericton, New Brunswick, Canada). *Canadian Journal of Psychology*, vol. 26, June 1972, p. 171-180. 12 refs. National Research Council of Canada Grant No. APA-260.

Experimental reexamination of Rock and Victor's (1964) conclusion that visual-tactile conflicts will be resolved in favor of vision. The results of the described experiment present some evidence that methodological problems may have produced a bias in favor of vision and that the generalization of vision as a dominant modality may be premature. M.V.E.

A72-34293 * # Response functions for sine- and square-wave modulations of disparity. W. Richards (MIT, Cambridge, Mass.). (*Optical Society of America, Spring Meeting, Tucson, Ariz., Apr. 5-8, 1971.*) *Optical Society of America, Journal*, vol. 62, July 1972, p. 907-911. 11 refs. NIH-NASA-supported research; Contract No. F44620-69-C-0108.

Depth sensations cannot be elicited by modulations of disparity that are more rapid than about 6 Hz, regardless of the modulation amplitude. Vergence tracking also fails at similar modulation rates, suggesting that this portion of the oculomotor system is limited by the behavior of disparity detectors. For sinusoidal modulations of disparity between 1/2 to 2 deg of disparity, most depth-response functions exhibit a low-frequency decrease that is not observed with square-wave modulations of disparity. (Author)

A72-34298 Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. B. Tursky (New York, State University, Stony Brook, N.Y.), D. Shapiro

(Harvard University, Boston, Mass.), and G. E. Schwartz (Harvard University, Cambridge, Mass.). *IEEE Transactions on Biomedical Engineering*, vol. BME-19, July 1972, p. 271-276. 19 refs. Grants No. NIH-MH-04172; No. NIH-MH-08853; Contract No. N00014-67-A-0298-0024.

Description of an automated constant-cuff-pressure system to remotely determine average human blood pressure levels in an effort to overcome problems in measurement caused by natural beat-to-beat fluctuations in arterial pressure. A standard blood pressure cuff is inflated to approximately systolic pressure for a prescribed number of heart cycles. Korotkoff (K) sounds are picked up by a crystal microphone over the brachial artery. The EKG is recorded and an electronic coincidence circuit detects the number of R waves followed by a K sound. Cuff pressure is automatically adjusted until there is a 50% coincidence of R-K sounds. This cuff pressure is now by definition in the median systolic pressure. The same procedure is followed to determine median diastolic pressure. A change of 2 mm Hg in cuff pressure alters the R-K coincidence by 25%, insuring an accuracy of measurement of plus or minus 2 mm Hg. Average measures of pressure obtained by the constant cuff-pressure method were demonstrated to be as accurate as averages based on intra-arterial readings. Application of this system in epidemiological screening is discussed. (Author)

A72-34299 Microwave radiation - Biophysical considerations and standards criteria. H. P. Schwan (Pennsylvania, University, Philadelphia, Pa.). *IEEE Transactions on Biomedical Engineering*, vol. BME-19, July 1972, p. 304-312. 37 refs. Grant No. NIH-5-R01-HE-01253; Contract No. Nonr-551(05).

The established physical principles relating to thermal and nonthermal effects of microwave radiation are discussed together with the effects of continuous and pulsed radiation. Certain considerations indicate that present guidelines for safe exposure to microwaves are conservative. There should be no need to lower the value of 10 mW/sq cm currently being used for safe long-term exposure in distance fields of antennas. Approaches for extending standards to the case of complex field configurations are also discussed along with a guide number of safe tissue-current densities for the total frequency range. G.R.

A72-34300 Clinical aspects of nonionizing radiation. M. M. Zaret (Zaret Foundation, Inc., Scarsdale, N.Y.). *IEEE Transactions on Biomedical Engineering*, vol. BME-19, July 1972, p. 313-316. 12 refs.

Various types of human injury attributable to nonionizing radiations are presented. Because of the unique combination afforded by the optical qualities of the eye and by the differential diagnostic features of resultant ocular pathology, an ophthalmological examination frequently can provide the signature indicating whether visible or invisible radiations produced the injury. For example, visible radiations principally result in various forms of macular photoretinitis and retinal burn or detachment or chorioretinal melanomata; whereas, invisible radiations principally produce thermal types of cataract or uveitis. Other systemic injuries and effects are also discussed. A rationale is submitted in support of a new concept, elastic membrane fatigue, as an etiological factor for otherwise inexplicable findings, such as the increased incidence of cardiovascular disease, which parallels the increased ambient levels of electronic smog found in urban environments. (Author)

A72-34344 Thermal relationship between tympanic membrane and hypothalamus in conscious cat and monkey. M. A. Baker, R. A. Stocking, and J. P. Meehan (Southern California, University, Los Angeles, Calif.). *Journal of Applied Physiology*, vol. 32, June 1972, p. 739-742. 15 refs. Grant No. NIH-NS-09599-01.

Simultaneous measurements of hypothalamic temperature and tympanic membrane temperature were made in two cats and one

monkey in which thermocouples had been chronically implanted at the two sites. The changes that occur in hypothalamic temperature during feeding, sleeping, and arousal, shown previously to be due to changes in temperature of the cerebral arterial blood, are accompanied by similar changes in tympanic temperature. It is concluded that changes in arterial blood temperature affect the hypothalamus and the tympanic membrane in the same way and that tympanic temperature is a good index of hypothalamic temperature in behaving animals. (Author)

A72-34345 Ventilation in man during exercise at high altitude. S. Lahiri (Pennsylvania, University, Philadelphia, Pa.), J. S. Milledge (Christian Medical College, Vellore, India), and S. C. Sorensen (Copenhagen, University, Copenhagen, Denmark). *Journal of Applied Physiology*, vol. 32, June 1972, p. 766-769. 12 refs. Research supported by the Foundation for the Advancement of Medical Science of Denmark; World Health Organization Grant No. SOH-008/1968; Grant No. NIH-HE-08805.

The significance of the peripheral chemoreflex in the ventilation response to hypoxia during physical exercise can be studied in people born and raised at high altitude. Such persons show a blunted peripheral chemoreflex response to hypoxia at rest. Studies were conducted regarding the ventilatory response to exercise during chronic hypoxia in native residents of areas at an altitude of 3,800 m and areas at 2,900 m. Responses in sojourning sea-level natives acclimatized to altitude were also investigated. It was found that during acute hyperoxia, ventilation was somewhat greater in the highlanders than in the lowlanders. G.R.

A72-34346 Effect of carbon dioxide pressure level on alveolar-arterial carbon dioxide pressure difference during rebreathing. N. L. Jones, D. G. Robertson, J. W. Kane, and E. J. M. Campbell (McMaster University, Hamilton, Ontario, Canada). *Journal of Applied Physiology*, vol. 32, June 1972, p. 782-787. 19 refs. Research supported by the Ontario Thoracic Society; Medical Research Council of Canada Grant No. 215-2880.

A range of carbon dioxide contents corresponding to pressures from 25 to 60 mm Hg in arterial blood and from 50 to 110 mm Hg in the rebreathing equilibrium was considered in the investigations. It was found that the values for heart rate, carbon dioxide output, and blood lactic acid concentration were not consistently different at different levels of carbon dioxide content. Studies were conducted during exercise and while the subjects were at rest. During rebreathing the carbon dioxide content in alveolar gas was consistently higher than in the arterial blood sampled 5 sec later. This difference in carbon dioxide content was closely related to the level of carbon dioxide content in the gas phase. G.R.

A72-34347 Myocardial lipid and carbohydrate metabolism in fasting men during prolonged exercise. L. Kaijser, B. W. Lassers, M. L. Wahlqvist, and L. A. Carlson (Uppsala, University, Uppsala; Karolinska Hospital; King Gustav V Research Institute, Stockholm, Sweden). *Journal of Applied Physiology*, vol. 32, June 1972, p. 847-858. 37 refs. Swedish Medical Research Council Grants No. 19x-204-07; No. 19x-204-08.

Study of myocardial metabolism at rest and during prolonged exercise in 15 healthy subjects by measurement of arterial-coronary sinus concentration differences and the intravenous infusion of palmitate H₃ as a free fatty acid (FFA) tracer. During prolonged exercise the relative participation of total blood lipid and carbohydrate substrates in myocardial oxidative metabolism, as assessed by the oxygen extraction ratios, did not differ from the pattern at rest. Arterial-coronary sinus difference in oxygen content increased with exercise and was significantly correlated with heart rate. Myocardial extractions of FFA, glucose, and pyruvate, but not lactate, were significantly correlated with their respective arterial concentrations at rest. During prolonged exercise myocardial extractions of pyruvate and lactate, but not FFA and glucose, were correlated with their arterial concentrations. (Author)

A72-34418 Gain control and contrast sensitivity in the vertebrate retina. R. A. Normann and F. S. Werblin (California, University, Berkeley, Calif.). In: Institute of Electrical and Electronics Engineers, Southwestern Annual Conference and Exhibition, 24th, Dallas, Tex., April 19-21, 1972, Record. New York, Institute of Electrical and Electronics Engineers, Inc., 1972, p. 164-168. 9 refs. Grants No. NIH-EY-00561-02; No. NIH-RR-7006-06.

Consideration of the human visual system's capability to produce its high contrast sensitivity for background intensities spanning a billionfold range. It is shown that the retina has an automatic gain control mechanism which allows it to be maximally sensitive to variations in intensity of two log units around any given background intensity. This control mechanism is set by the background intensity. There are indications that the photoreceptors themselves, because of their compressive relationship of light intensity to potential, produce this gain control. From the horizontal cells to the photoreceptors, a negative feedback seems to exist that can extend the increment threshold curve for the receptors. M.V.E.

A72-34434 # Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas. F. Buhler (Schweizerische Rettungsflugwacht, Zurich, Switzerland). In: International Space Rescue Symposium, 4th, Brussels, Belgium, September 21, 1971, Proceedings. Paris, International Academy of Astronautics, 1972, p. 243-252.

A72-34435 # Some aspects of survival and rescue of astronauts in polar regions. O. Wilson (Institute of Aviation Medicine, Malmssatt, Sweden). In: International Space Rescue Symposium, 4th, Brussels, Belgium, September 21, 1971, Proceedings. Paris, International Academy of Astronautics, 1972, p. 253-272. 11 refs.

Consideration of factors contributing to the survival and rescue of astronauts accidentally landing in polar regions. The survival possibilities offered by an intact space capsule, the extravehicular spacesuit, and the survival kit are discussed, and improvisations that are within the power of the astronaut himself to make are suggested. The need for training of astronauts in optimum polar use of existing equipment, instruction in improvising needed items, and provision of a minimum of vital supplements is stressed. A.B.K.

A72-34436 # Possibilities and dangers during long working periods in space rescue. J. Cmiral, V. Dolezel, J. Dvorak, M. Pipal, and J. Sulc (Institute of Aviation Medicine, Prague, Czechoslovakia). In: International Space Rescue Symposium, 4th, Brussels, Belgium, September 21, 1971, Proceedings. Paris, International Academy of Astronautics, 1972, p. 273-279.

It is pointed out that during rescue operations it is sometimes necessary for individuals to work periods substantially longer than usual. The performance of operators working for 24 hours with only short periods of rest was studied. It is emphasized that the conclusions reached on the basis of the test results refer to situations which do not involve a highly responsible task, although the work load is great. It was found that in long operations and during uninterrupted working processes, the 24 hour work shift, followed by two days of rest, was acceptable. G.R.

A72-34445 * Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade. D. G. Boyers, J. G. Cuthbertson, and J. A. Luetscher (NASA, Ames Research Center, Moffett Field; Stanford University, Stanford, Calif.). *Simulation*, vol. 18, June 1972, p. 197-206. 21 refs.

A72-34464 Effects of instructions on measures of state and trait anxiety in flight students. S. F. Bucky, R. M. Bale (U.S. Naval Aerospace Medical Center, Pensacola, Fla.), and C. D. Spielberger (Florida State University, Tallahassee, Fla.). *Journal of Applied Psychology*, vol. 56, June 1972, p. 275, 276.

The State-Trait Anxiety Inventory was administered twice to 134 flight students during their routine entrance aviation physical examination, once with standard instructions and then under an artificially induced anxiety situation in which each student was instructed to respond 'as if you had just made your first landing on an aircraft carrier.' As expected, flight students were lower in trait anxiety and higher in state anxiety than a group of 253 previously tested male college students. Unexpectedly, however, with the induced anxiety act, both state and trait anxiety scores were significantly lower than the scores obtained during the initial administration of the test. (Author)

A72-34542 Regression analysis for steady state N2 inequality in O2 consumption calculations. J. H. Cissik and R. E. Johnson (Illinois, University, Urbana, Ill.). *Aerospace Medicine*, vol. 43, June 1972, p. 589-591.

A72-34543 Hemodynamic changes in man during immersion with the head above water. M. Arborelius, Jr., U. I. Balldin, B. Lilja, and C. E. G. Lundgren (Malmo General Hospital, Malmo; Lund, University, Lund, Sweden). *Aerospace Medicine*, vol. 43, June 1972, p. 592-598. 38 refs. Research supported by the Swedish Medical Research Council, Delegation for Applied Medical Defense Research and Swedish Association Against Heart and Chest Diseases. SMRC Project B70-40P-2633-02; SMRC Project B72-14X-3512-01.

A72-34544 # Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr. J. P. Cooke (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aerospace Medicine*, vol. 43, June 1972, p. 599-605. 22 refs.

A72-34545 Influence of prolonged starvation on the frequency of occurrence of decompression-induced pulmonary hemorrhage. H. S. Fang and H. S. Lin (National Taiwan University, Taipei, Nationalist China). *Aerospace Medicine*, vol. 43, June 1972, p. 606-609. Research supported by the National Science Council of Nationalist China.

A72-34546 Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATPase activity of rat tissue microsomes. T. Purshottam and N. C. Ghosh (Calcutta, University, Calcutta, India). *Aerospace Medicine*, vol. 43, June 1972, p. 610-613. 26 refs. Research supported by the Indian Council of Medical Research.

A72-34547 Effects of combined O-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*. A. Schatz and G. Teuchert (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bad Godesberg, West Germany). *Aerospace Medicine*, vol. 43, June 1972, p. 614-619. 19 refs.

A72-34548 Cell proliferation in lungs of mice exposed to elevated concentrations of oxygen. M. J. Evans (Rancho Los Amigos Hospital, Downey, Calif.) and J. D. Hackney (Stanford Research Institute, Menlo Park, Calif.). *Aerospace Medicine*, vol. 43, June 1972, p. 620-622. 17 refs. Contracts No. N00014-70-C-0306; No. NIH-71-2151.

A72-34549 * Vestibular behavior of fish during diminished g-force and weightlessness. R. J. von Baumgarten, G. Baldrighi (Michigan, University, Ann Arbor, Mich.), and G. L. Shillinger, Jr. (NASA, Ames Research Center, Systems Engineering Div., Moffett Field, Calif.). *Aerospace Medicine*, vol. 43, June 1972, p. 626-632. 22 refs. Contract No. NAS2-6057.

A72-34550 Natural acclimatization to work in severe heat. E. Shvartz, D. Benor, and E. Saar (Negev Institute for Arid Zone Research, Beer-Sheva; Tel Aviv University, Tel-Hashomer, Israel). *Aerospace Medicine*, vol. 43, June 1972, p. 637-640. 12 refs. Research supported by the Ministry of Education and Culture of Israel.

A72-34551 # Further study of combined heat, noise and vibration stress. W. F. Grether, C. S. Harris, M. Ohlbaum, P. A. Sampson, and J. C. Guignard (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB; Wright State University, Dayton, Ohio). *Aerospace Medicine*, vol. 43, June 1972, p. 641-645.

Study of a combination of heat, noise, and vibration stress on skin and rectal temperature, heart rate, weight loss, and biochemical urine analyses. An accelerometer was placed on the right shoulder to measure vibration transmitted to the body. Performance measures included two-dimensional compensatory tracking, choice reaction time, a voice communication test of logical alternatives, mental arithmetic, visual acuity and subjective ratings of the stress conditions. As in a previous study, the combination of stresses produced no additive stress interactions. On tracking and reaction time tests the greatest impairment of performance was produced by vibration alone. Accelerometer measures indicated that transmissibility of vibration was not altered by heat or noise. Subjective ratings of stress severity progressively increased with the number of stresses in the combination. Subjective ratings of stress intrusiveness, however, did not show such a trend. (Author)

A72-34552 * Comparative study of two direct methods of bone mineral measurement. P. C. Rambaut, L. F. Dietlein, J. M. Vogel, and M. C. Smith, Jr. (NASA, Manned Spacecraft Center, Houston, Tex.; U.S. Public Health Service Hospital, San Francisco, Calif.). *Aerospace Medicine*, vol. 43, June 1972, p. 646-650. 39 refs. NASA-supported research. NASA Order T-58941; NASA Order T-81070.

A72-34553 * # Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids. E. L. Foulds, Jr., F. H. Wilson, Jr., E. C. Larkin, and D. A. Clark (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aerospace Medicine*, vol. 43, June 1972, p. 651-655. 25 refs. NASA-supported research.

A72-34554 Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. R. D. Gilson (Ohio State University, Columbus, Ohio), D. J. Schroeder, W. E. Collins (FAA, Oklahoma City, Okla.), and F. E. Guedry, Jr. (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *Aerospace Medicine*, vol. 43, June 1972, p. 656-660. 5 refs. FAA-Army-Navy-supported research.

A72-34555 Airline pilot incapacitation in flight. R. C. Leighton-White (International Federation of Airline Pilots Associations, London, England). *Aerospace Medicine*, vol. 43, June 1972, p. 661-664. 6 refs.

Following a review of the reported cases of pilot incapacitation in flight, the operational aspects are discussed and suggestions made for reducing the incidence and for dealing with it. The suggested program involves airline management and flight crews in the prevention, detection and dealing with the event, as well as aircraft manufacturers in human engineering factors. (Author)

A72-34556 Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with special reference to spinal fractures. H. D. Joensen and H. D. Joensen. *Aerospace Medicine*, vol. 43, June 1972, p. 665-670. 28 refs.

A72-34557 Grouping of the causative factors in investigation of aircraft accidents attributed to pilot errors. N. G. Dudani (Naval Air Station, Dabolim, India). *Aerospace Medicine*, vol. 43, June 1972, p. 671-674. 5 refs.

A72-34559 USAF custom fit oxygen mask program. G. W. Hall (USAF, Air Force Advisory Group, San Francisco, Calif.). *Aerospace Medicine*, vol. 43, June 1972, p. 679, 680.

A72-34726 * Exercise capacity in a population of domestic fowl - Effects of selection and training. J. T. Morse and A. H. Smith (California, University, Davis, Calif.). *American Journal of Physiology*, vol. 222, June 1972, p. 1380-1385. 32 refs. Grant No. NGR-05-004-008.

A72-34727 Influence of hyperosmolality on left ventricular stiffness. G. H. Templeton, J. H. Mitchell, and K. Wildenthal (Texas, University, Dallas, Tex.). *American Journal of Physiology*, vol. 222, June 1972, p. 1406-1411. 24 refs. Research supported by the Dallas Heart Association; Grant No. PHS-HL-06296.

Investigation of the influence of sudden changes in osmolality by giving hypertonic sucrose to five dogs on whole-heart bypass, with paced, isovolumically contracting left ventricles. Stiffness was determined from the ratio of pressure change to volume change during sinusoidal injections of 1 ml saline into the isolated chamber at 6 to 11 times per beat. Increases of serum osmolality from a control of 300 to 400 mOsm and subsequently to 500 mOsm/kg H₂O caused progressive increases in stiffness during both diastole and systole at higher rates (22 Hz) of volume change; during slower perturbation frequencies (12 Hz) the apparent stiffness was not altered, suggesting that time-dependent (i.e., viscoelastic) properties of the muscle were affected selectively by hyperosmolality but that pure elastic properties were not altered. The observed changes in stiffness were not dependent on the simultaneously occurring changes in ventricular pressure and contractile state. (Author)

A72-34728 * Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air. D. P. Clarkson, C. L. Schatte, and J. P. Jordan (Colorado State University, Fort Collins, Colo.). *American Journal of Physiology*, vol. 222, June 1972, p. 1494-1498. 20 refs. Grant No. NGR-06-002-075.

A72-34729 * Stress and adaptation responses to repeated acute acceleration. R. R. Burton and A. H. Smith (California, University, Davis, Calif.). *American Journal of Physiology*, vol. 222, June 1972, p. 1505-1510. 29 refs. Grant No. NGR-05-004-008.

Study in which groups of adult male chickens (single-comb white leghorn) were exposed daily to acceleration (centrifugation) of

2 or 3 G for 10 min, 1, 4, 8, 12, 16, and 24 hr (continuously), or 0 time (controls). After approximately five months of this intermittent treatment (training), the birds were exposed to continuous accelerations of the same G force (intensity). The degree of stress and adaptation of each bird was determined by survival and relative lymphocyte count criteria. Intermittent training exposures of 2 G developed levels of adaptation in birds directly proportional to the duration of their daily exposure. Intermittent training periods at 3 G, however, produced a physiological deterioration in birds receiving daily exposures of 8 hr or more. Adaptive benefits were found only in the 1- and 4-hr-daily intermittent 3-G exposure groups. Exposure to 3 G produced an immediate stress response as indicated by a low relative lymphocyte count which returned to control (preexposed) values prior to the next daily acceleration period in the 10-min, 1-hr, and 4-hr groups. This daily recovery period from stress appeared to be necessary for adaptation as opposed to deterioration for the more severe environmental (3 G) alteration. (Author)

A72-34730 Thyroidal influence on myocardial changes induced by simulated high altitude. L. G. Martin, G. E. Wertenberger, J. R. Hippensteele (Indiana University, Bloomington, Ind.), and R. W. Bullard. *American Journal of Physiology*, vol. 222, June 1972, p. 1599-1603. 44 refs. Contract No. F44620-68-C-0014.

Study in which rats were acclimated for a 5-week period to either a simulated high altitude of 24,800 ft or to a Bloomington, Ind., altitude of 800 ft above sea level and were treated daily with injections of L-thyroxine (sodium) pentahydrate and 6-propyl-2-thiouracil. By means of an in vitro right ventricular preparation, it was demonstrated that making either altitude-acclimated or sea-level animals hypothyroid increases their myocardial anoxic resistance. While exogenous L-thyroxine abolished the added myocardial anoxic resistance induced by altitude acclimation, myocardial tissue from sea-level rats could be made to functionally mimic that taken from control altitude-acclimated animals by inducing hypothyroidism. It was concluded that the development of the hypothyroid state during chronic high-altitude exposure is essential if the myocardium is to show the added anoxic resistance associated with altitude acclimation. However, neither the polycythemia nor the cardiac hypertrophy of altitude-acclimation was obliterated by preventing attainment of the hypothyroid state normally associated with altitude acclimation. Possible mechanisms responsible for these differences are discussed. (Author)

A72-34876 The effect of target contrast variation on dynamic visual acuity and eye movements. B. Brown (Melbourne, University, Melbourne, Australia). *Vision Research*, vol. 12, July 1972, p. 1213-1224. 13 refs. Research supported by the Australian Road Research Board. ARRB Project 95230.

Dynamic visual acuity was investigated in 4 subjects with Snellen letter acuities of 6/6 on Landolt ring targets projected onto a rotating mirror and thence onto a matt-white hemicylindrical screen. The target was brighter than the background, with mean contrast levels varying from 70.3 to 23.3%. The eye movements were recorded photoelectrically, and the signals were amplified, converted into digits and punched on paper tape. The latencies of initial and saccadic eye movements were higher and the final-pursuit eye movement velocities were lower when the target contrast levels were lower. V.Z.

A72-34877 The distribution of the long wave photoreceptors in the compound eye of the honey bee as revealed by selective osmic staining. F. G. Gribakin (Akademii Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). *Vision Research*, vol. 12, July 1972, p. 1225-1230. 17 refs.

Darkness-adapted eyes of honeybees were fixed in glutaric aldehyde and then were fixed in osmium tetroxide in light of 480 nm

or larger wavelengths. Electron microscopy showed a clearly seen selective staining of receptor-530 rhodopsins. It is theorized that an agent produced by the interaction of osmium tetroxide with the products of visual pigment decomposition is responsible for the staining. V.Z.

A72-34878 Electoretinographic evidence for a photopic system in the rat. R. W. Massof and A. E. Jones (Hamline University, St. Paul, Minn.). *Vision Research*, vol. 12, July 1972, p. 1231-1239. 20 refs.

Experiments on 15 albino and hooded rats and 3 rhesus monkeys, in which b-waves were tape-recorded, showed the generation of a bimodal b-wave amplitude, and a bimodal luminosity curve with maxima at 510 and 570 to 600 nm. The b-wave implicit time varied with wavelength and signal intensity, showing a rod-cone break at 500 nm. An x-wave having a maximum amplitude at 480 nm was isolated from the b-wave. It is theorized that rats have a photopic system and a long-wave receptor pigment which mediates the red response. V.Z.

A72-34879 Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination. A. Lit, J. P. Finn, and W. M. Vicars (Southern Illinois University, Carbondale, Ill.). *Vision Research*, vol. 12, July 1972, p. 1241-1251. 26 refs. NSF Grant No. GB-2553; Grant No. NIH-EY-0383.

A72-34880 Light induced alterations in growth pattern of the avian eye. A. B. Bercovitz, P. C. Harrison, and G. A. Leary (Washington State University, Pullman, Wash.). *Vision Research*, vol. 12, July 1972, p. 1253-1259. 13 refs.

Five hundred day-old Single Comb White Leghorn chicks were exposed to high-intensity or low-intensity clear incandescent light or to low-intensity blue light, with an equal daily photoperiod of 14L/10D. The development of abnormally enlarged eyes was in evidence after 8 days of exposure to low-intensity clear and blue light and became well pronounced by the 49th day of exposure. Also the ocular components were altered after exposure and a marked change in visual parameters occurred leading to an axial length myopia. V.Z.

A72-34881 The uptake, metabolism and release of C(14)-taurine by rat retina in vitro. M. S. Starr and M. J. Voaden (Institute of Ophthalmology, London, England). *Vision Research*, vol. 12, July 1972, p. 1261-1269. 15 refs.

Experiments on Wistar albino rats showed that their retinas actively accumulated C(14)-taurine when incubated with the amino acid in vitro. Ouabain, L-cysteine, beta-alanine, GABA, and L-glutamate inhibited the uptake. Transport of C(14)-taurine was highest at 37 C and went down at lower temperatures; its efflux was a very slow two-stage process, suggesting that the amino acid was firmly bound by the retina. V.Z.

A72-34882 Two types of parafoveal spectral sensitivity. D. A. Palmer (Institute of Ophthalmology, London, England). *Vision Research*, vol. 12, July 1972, p. 1271-1279. 11 refs.

A trichromatic colorimeter with a monochromator was used to produce test stimuli to be matched photometrically in an annular field by two subjects who had normal visual acuity, color vision, scotopic sensitivity, and two different types of parafoveal spectral sensitivity. One subject had a usual type of the photopic curve with a peak at about 540 nm, while the other had a photopic curve with a peak at about 520 nm. Hypotheses are given to explain the nature of the latter type of vision. V.Z.

A72-34883 The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in *Rana esculenta*. H. Krueger and E. A. Moser (München, Technische Universität, Munich, West Germany). *Vision Research*, vol. 12, July 1972, p. 1281-1289. 9 refs. Research supported by the Deutsche Forschungsgemeinschaft.

A72-34884 Evidence for the role of the transient neural 'off-response' in perception of light decrement - A psychophysical test derived from neuronal data in the cat. B. Brooks and C. Huber (Max-Planck-Gesellschaft zur Förderung der Wissenschaften, W. G. Kerckhoff-Herzforschungsinstitut, Bad Nauheim, West Germany). *Vision Research*, vol. 12, July 1972, p. 1291-1296. 10 refs.

A72-34885 Linear-nonlinear-linear transition as a function of frequency in the retinal response to light. J. Levett (Rush Presbyterian St. Luke's Medical Center; Illinois, University, Chicago, Ill.). *Vision Research*, vol. 12, July 1972, p. 1301-1305. Research supported by the Rush Presbyterian St. Luke's Medical Center.

A72-34886 Release of pursuit eye movements using after-images. M. J. Steinbach and D. G. Pearce (York University, Downsview, Ontario, Canada). *Vision Research*, vol. 12, July 1972, p. 1307-1311. 14 refs. National Research Council of Canada Grant No. A-7664.

Release and pursuit eye movements were investigated in dark room experiments with flashes producing uniform circular after-images at a visual angle of about one deg. from a mark on an illuminated scale at which the subject's eye was fixed. No evidence was found for initiating microsaccades during the onset of the eye movements elicited by after-images. Drift is believed to play a significant but partial role in pursuit movement initiation. V.Z.

A72-34897 Relaxation phenomena in the biological carbon cycle under conditions of variable atmospheric CO₂-content. K. Wagener (Kernforschungsanlage Jülich GmbH, Jülich, West Germany) and H. Förstel (Rheinisch-Westfälische Technische Hochschule, Aachen, West Germany). *Zeitschrift für Naturforschung, Teil a*, vol. 27a, May 1972, p. 812-815. 9 refs.

A72-34932 Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amiloride. M. S. Croxson, J. M. Neutze, and M. B. John (Green Lane Hospital; Auckland Hospital, Auckland, New Zealand). *American Heart Journal*, vol. 84, July 1972, p. 53-60. 21 refs.

A72-34942 Increase in skeletal muscle performance during emotional stress in man. N. A. Berdina, O. L. Kolenko, I. M. Rodionov (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR), I. M. Kotz, A. P. Kuznetsov (State Central Institute of Physical Culture, USSR), A. P. Savtchenko (Pervyi Moskovskii Meditsinskii Institut, Moscow, USSR), and V. I. Thorevsky (Akademii Meditsinskii Nauk, Moscow, USSR). *Circulation Research*, vol. 30, June 1972, p. 642-650. 42 refs.

An emotional stress arising as a result of intense mental arithmetic causes (in most subjects) an increase in blood flow through resting forearm muscle by an average of 85%. Combination of voluntary sustained handgrip contraction with mental arithmetic has shown that the duration of contraction increases by an average of 46%. This effect appears only in subjects who display an increase in blood flow as a result of mental arithmetic. A rise in muscle

performance is also observed during mental arithmetic when contraction of forearm muscle is caused by direct stimulation of the motor nerve in the upper arm. Intra-arterial injection of atropine sharply reduces both the increase in blood flow through the resting muscle and the increase in muscle performance associated with mental arithmetic. (Author)

A72-34976 Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1. Symposium sponsored by the International Society of Cardiology, World Health Organization, and Swiss National Science Foundation. Edited by P. Moret (Geneva, University, Geneva, Switzerland) and Z. Fejfar (World Health Organization, Geneva, Switzerland). *Cardiology*, vol. 56, no. 1-6, 1971-1972. 397 p.

Topics related to acute hypoxia are considered, giving attention to questions of substrate utilization and glycolysis in the heart, the regulation of phosphofructokinase in muscle tissue, electron transport and mitochondria, and myocardial protein synthesis in acute myocardial hypoxia and ischaemia. Subjects examined in connection with chronic hypoxia include myocardial metabolic changes in chronic hypoxia and the effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. Contributions in the area of ischaemia are also discussed together with some controversial methodological aspects.

G.R.

A72-34977 Substrate utilization and glycolysis in the heart. L. H. Opie (Cape Town, University; Groote Schuur Hospital, Cape Town, Republic of South Africa). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 2-21. 76 refs. Research supported by the Chris Barnard Fund, University of Cape Town, and Medical Research Council of the Republic of South Africa.

A historical introduction concerning the evolution of the concepts regarding the control of glycolysis in the heart is given. The contributions of the classical physiologists to problems of the control of glycolysis in relation to acute hypoxia are reviewed, giving attention to substrate competition, the effects of insulin, and the effects of oxygen-lack on glucose metabolism and glycolysis. Other questions considered are related to the importance of glucose for the oxidative metabolism of the heart, the control of glycolysis by oxidative metabolism, and the contribution of anaerobic glycolysis to energy demands of the anoxic heart and of the ischaemic infarcting myocardium.

G.R.

A72-34978 Electron transport and mitochondria. A. Schwartz (Methodist Hospital, Houston, Tex.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 35-42. Research supported by the American Heart Association; Grants No. PHS-HE-05435; No. PHS-HE-07906; No. PHS-HE-13873; No. PHS-HE-05925.

The process of mitochondrial metabolism in both normal and hypoxic heart muscle is reviewed. The electron transport system is very active in heart mitochondria. The system is specifically located in or on the inner membrane system. Substrates, such as glutamic acid and citric acid, can pass electrons and protons to bound NAD. Electrons and protons then pass down the electron transport chain to the ultimate electronic acceptor, oxygen. Studies of the function and structure of mitochondria from a variety of pathological tissues are discussed. Ion transport processes were investigated and experiments were conducted with the aid of a portable perfusion chamber. Mitochondria isolated from hearts showed a remarkable stability in vitro. It was found that electron transport and phosphorylation may be preserved during hypoxia by the use of certain agents. G.R.

A72-34979 The effects of acute hypoxia on lipid synthesis in the rat heart. P. Harris and J. Gloster (London, University, London, England). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 43-47. 6 refs.

A72-34980 Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A. Wollenberger, K. Onnen, U. Hinterberger, G. Rabitzsch, and B. Kleitke (Deutsche Akademie der Wissenschaften, Institut für Kreislaufforschung, Berlin, East Germany). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 48-64. 49 refs.

A72-34981 Acute myocardial anoxia - Anatomical changes and their possible relation to immunological processes. A. Laufer (Hebrew University, Jerusalem, Israel). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 65-72. 8 refs. Research supported by the Hebrew University and Hadassah University Hospital.

A72-34982 Acute hypoxia of the myocardium - Ultrastructural changes. P. Y. Hatt and J. Moravec (Institut National de la Santé et de la Recherche Médicale, Limeil-Brevannes, Val-de-Marne, France). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 73-84. 84 refs. Délégation Générale à la Recherche Scientifique et Technique Contract No. 6700536.

Alterations attributed to hypoxic injury of the myocardium are considered together with the reversibility of changes, the relationship between the degree of hypoxia and the appearance of structural alterations, and the significance and specificity of electron microscopic lesions. Other subjects discussed include problems of mitochondrial swelling, and the effect of drugs which modify electron transport and oxidative phosphorylation on the ultrastructure of heart mitochondria. G.R.

A72-34983 Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes. H. Benzing, G. Gebert, and M. Strohm (Physiologisches Institut, Tübingen; Ulm, Universität, Ulm, West Germany). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 85-88. 5 refs.

A72-34984 Changes of intracellular myocardial electrolytes in experimental hypertension. H. Hochrein, G. Hunsmann, and K. Stoepe (Rudolf Virchow Krankenhaus, Berlin; Institute of Pharmacology, Wuppertal-Elberfeld, East Germany). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 96-99. 29 refs.

A72-34985 Changes in energy stores in the hypoxic heart. R. E. Olson, N. S. Dhalla, and C. N. Sun (St. Louis University, St. Louis, Mo.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 114-124. 19 refs. Grant No. NIH-HE-09772; Contract No. NIH-PH-43-67-680.

The heart from male albino rats after decapitation was removed, chilled, and arranged for perfusion by the conventional Langendorff technique. Two gas mixtures were used. Initially, the mixture was 95% oxygen and 5% carbon dioxide. The mixture was changed to one with 95% nitrogen and 5% carbon dioxide to induce tissue anoxia. The isometric contractile force of the isolated heart was monitored. The adenine nucleotides, ATP, ADP, and AMP were determined enzymatically using fluorometric methods. Changes in coronary flow, dry/wet weight ratio of the isolated heart, and the high-energy phosphate stores during perfusion are discussed. G.R.

A72-34986 The intramyocardial oxygen pressure at normoxia and hypoxia. S. Schuchhardt (Institut für Arbeitsphysiologie, Dortmund, West Germany). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 125-128.

A72-34987 The influence of exogenous ATP on cardiac metabolism in acute hypoxia. A. Ziegelhöffer, M. Fedelesova, and K. Siska (Slovak Academy of Sciences, Institute of Experimental Surgery, Bratislava, Czechoslovakia). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 136-142. 18 refs.

A72-34988 Myocardial ultrastructure in acute and chronic hypoxia. V. J. Ferrans and W. C. Roberts (National Institutes of Health, National Heart and Lung Institute, Bethesda, Md.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 144-160. 87 refs.

Cardiac hypoxia is defined as the state of inadequate oxygenation of the myocardium for normal function. It is pointed out that the ultrastructural changes caused by myocardial hypoxia vary according to its duration and severity, mechanism of production, age, and species. Ultrastructural changes caused by various mechanisms are considered, giving attention to the permanent and the temporary occlusion of a coronary artery, acute cardiac hypoxia produced by means other than coronary obstruction, acute hypoxia due to toxic inhibition of oxidative processes, cardiac arrest, and chronic hypoxia. G.R.

A72-34989 Myocardial metabolic changes in chronic hypoxia. P. R. Moret (Hôpital Cantonal, Geneva, Switzerland). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 161-172. 49 refs. Research supported by the World Health Organization, Foundation S. I. Patino, Swiss National Science Foundation, Swiss Cardiology Foundation, Cantonal Hospital, and University of Geneva.

Populations of high-altitude regions have adapted to the conditions of chronic hypoxia. Three groups of young normal subjects born or living at different altitudes for several years were studied. It was found that the decrease in coronary flow observed in residents of high altitudes is not compensated by the increased

oxygen transport capacity of the blood due to a higher hematocrit. Therefore, the oxygen supply to the myocardium is also decreased. The utilization of substrates in subjects living in regions of different altitudes is discussed together with differences in anaerobic metabolism, aerobic capacity, and myocardial stores. G.R.

A72-34990 **Role of the synthesis of nucleic acids and proteins in the adaptation of the organism to altitude hypoxia.** F. Z. Meerson (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 173-187. 47 refs.

A72-34991 **Anoxic tolerance of the heart muscle in different types of chronic hypoxia.** O. Poupa (Goteborg, University, Goteborg, Sweden). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 188-196. 30 refs. Swedish Medical Research Council Grants No. K69-14X-2729-01; No. B70-14X-2729-02; No. K70-14P-3025-01; No. B71-14P-3025-02A.

A72-34992 **Cardiac performance and the coronary circulation of man in chronic hypoxia.** R. F. Grover (Colorado, University, Denver, Colo.) and J. K. Alexander (Baylor University, Houston, Tex.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 197-206. 15 refs. Grants No. NIH-HE-05435; No. NIH-HE-08728; Contract No. DA-49-193-MD-2551.

At an altitude of 3,100 m the oxygen tension in the arterial blood of a person is about one third less than at sea level. Numerous changes in the body oxygen transport systems occur in response to this stimulus. Data were obtained from healthy young men first at sea level and subsequently after transportation to an altitude of 3,100 m. It was found that a decrease in coronary blood flow and a decrease in cardiac output follows the adaptation to high altitude. G.R.

A72-34993 **Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria.** B. Reynafarje (Instituto de Biologia Andina, Lima, Peru). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 206-208. 6 refs.

A72-34994 **Ion alterations during myocardial ischemia.** R. B. Case (St. Luke's Hospital, New York, N.Y.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 245-262. 25 refs.

It is pointed out that intracellular potassium loss is apparently a general tissue response to a disturbance of the oxygen supply. In the case of the cardiac muscle this loss becomes critical because of deleterious effects on rhythm and contractility. A continuous sampling technique for analyzing potassium and lactate in blood was designed. The technique was used for the study of myocardial ischemia, giving attention to the relation between the potassium loss and oxygen deficiency. The lactate concentration was used as an index of the adequacy of the oxygen supply. G.R.

A72-34995 **Morphological alterations in the ischaemic heart.** H. A. Heggveit (Ottawa, University, Ottawa, Canada). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 284-290. 24 refs.

Aspects of the pathological diagnosis of acute ischaemic heart disease are considered, giving particular attention to difficulties in the assessment of early ischaemic lesions in the myocardium. The development of microscopical changes in acute myocardial infarction is discussed. The correlation of ultrastructural data with biochemical findings confirms the importance of catecholamine release and ionic shifts in the early evolution of ischaemic myocardial injury. G.R.

A72-34996 **Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility.** E. H. Sonnenblick (Peter Bent Brigham Hospital, Boston, Mass.) and E. S. Kirk (Harvard University, Boston, Mass.). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 302-313. 10 refs. Grant No. NIH-HE-11306.

A72-34997 **Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction.** M. F. Oliver and P. A. Yates (Royal Infirmary, Edinburgh, Scotland). (*International Society of Cardiology and World Health Organization, Symposium on Metabolism of the Hypoxic and Ischaemic Heart, Geneva, Switzerland, June 14-17, 1971.*) *Cardiology*, vol. 56, no. 1-6, 1971-1972, p. 359-364. 13 refs.

A72-35001 **Effect of magnetic fields on biological objects (Vliianie magnitnykh polei na biologicheskie ob'ekty).** Edited by Iu. A. Kholodov. Moscow, Izdatel'stvo Nauka, 1971. 215 p. 407 refs. In Russian.

Studies of the effects of constant, alternating, and pulsed magnetic fields on various biological subjects are included. The mechanisms of these effects in humans, animals, plants and microorganisms are discussed. Among the topics considered are physical effects, such as mhd blood flow inhibition and elastic biological fiber vibrations; effects on enzymes, respiration, chromosome aberrations, and plant growth; and pathological changes caused by magnetic fields. Magnetic field effects under working conditions are examined, along with experimental techniques. V.Z.

A72-35002 # **Physical phenomena occurring in living objects under the action of constant magnetic fields (Fizicheskie iavleniia proiskhodiashchie v zhivyykh ob'ektakh pod deistviem postoiannykh magnitnykh polei).** Ia. G. Dorfman (Akademiia Nauk SSSR, Institut Istorii Estestvoznaniia i Tekhniki, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 15-23. In Russian.

Theoretical consideration of the main physical phenomena arising in living material subjected to the action of constant magnetic fields. It is shown that under the action of constant magnetic fields three main types of physical effects can arise in living objects - namely, magnetodynamic braking of the circulation of the blood and other fluids; elastic vibrations of nerve, muscle, and plant fibers during the propagation of bioelectric pulses through them (these vibrations in turn cause a distortion and delay of the pulses themselves); and, finally, orientation and concentration changes in biologically active macromolecules in solutions (changes which affect the kinetics of biochemical reactions and other physicochemical processes). A.B.K.

A72-35003 # Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism (Vliianie magnitnogo polia na fermenty, tkanevoe dykhanie i nekotorye storony obmena v intaktnom organizme). M. A. Shishlo (Tsentrāl'nyi Nauchno-Issledovatel'skii Institut Kurortologii i Fizioterapii, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 24-40. In Russian.

A72-35004 # Effects of magnetic fields on microorganisms (Vliianie magnitnykh polei na mikroorganizmy). S. A. Pavlovich (Ivano-Frankovskii Meditsinskii Institut, Ivano-Frankovsk, Ukrainian SSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 41-55. In Russian.

A72-35005 # Mechanism of the biological action of a constant magnetic field (O mekhanizme biologicheskogo deistviia postoiannogo magnitnogo polia). A. B. Kogan, T. S. Sachava, L. I. Dorozhkina, V. M. Pavelko, and I. N. Gol'tseva (Rostovskii-na-Donu Gosudarstvennyi Universitet, Rostov, Ukrainian SSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 56-68. In Russian.

A72-35006 # Action of a constant magnetic field on plant growth (Deistvie postoiannogo magnitnogo polia na rost rastenii). Iu. I. Novitskii, V. Iu. Strekova, and G. A. Tarakanova (Akademiia Nauk SSSR, Institut Fiziologii Rastenii, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 69-88. In Russian.

A72-35007 # Influence of a magnetic field on radiation-induced chromosome aberrations in plants (Vliianie magnitnogo polia na radiatsionno-indutsirovannye khromosomnye aberratsii u rastenii). A. A. Pozolotin (Akademiia Nauk SSSR, Institut Ekologii Rastenii i Zhivotnykh, Sverdlovsk, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 89-97. In Russian.

A72-35008 # Pathologic-anatomic characterization of changes induced by magnetic fields in experimental animals (Patologoanatomicheskaiia kharakteristika izmenenii voznikaushchikh u eksperimental'nykh zhivotnykh pod vlianiem magnitnykh polei). I. V. Toroptsev, G. P. Garganev, T. I. Gorshenina, and N. L. Tepliakova (Tomskii Gosudarstvennyi Meditsinskii Institut, Tomsk, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 98-107. In Russian.

A72-35009 # The magnetic field, infection and immunity (Magnitnoe pole, infektsiia i immunitet). N. V. Vasil'ev, I. B. Shternberg, and L. F. Boginich (Tomskii Gosudarstvennyi Meditsinskii Institut, Tomsk, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 108-123. In Russian.

Some effects of magnetic fields upon the immunity mechanism of an organism are described. In a study of the effect of a magnetic field upon the infection process, white mice were subjected to constant and alternating magnetic fields, after having been inoculated with an antiencephalitis vaccine. It was found, from the resistance index and from the antibody titer, that the application of a magnetic

field during the period of immunization sharply depresses the resistance of the animals to subsequent inoculation with mite encephalitis. Other investigations indicate that the effect of the magnetic field upon an organism is influenced by the factors of natural humoral immunity. Results of studies describing the effect of magnetic fields with different characteristics, but high intensity, applied immediately before immunization, as a rule somewhat inhibit the formation of antibodies (although this tendency is statistical), and the same factors, applied in the early period of immunization, markedly stimulate antibody formation. Later stages of antibody growth are relatively resistant to a magnetic field. D.F.L.

A72-35010 # Effect of a magnetic field on the nervous system (Vliianie magnitnogo polia na nervnuu sistem). Iu. A. Kholodov (Akademiia Nauk SSSR, Institut Vysshei Nervnoi Deiatel'nosti i Neirofiziologii, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 124-146. In Russian.

Review of the literature on the effects of a constant magnetic field on the organisms of animals and human beings. It is shown that, although a magnetic field does not cause any special 'magnetic' sensations in human beings, this stimulus penetrates into the sense sphere mainly through the visual or cutaneous analyzer. Experiments on both humans and animals showing the effect of a constant magnetic field on the activity of the neuromuscular apparatus are described, as well as experiments dealing with the effect of a magnetic field on the reactions of intact organisms of fish, birds, and mammals. Finally, a detailed review is presented of experiments dealing with the primary physiological reactions of the central nervous system of rabbits to an applied magnetic field. A.B.K.

A72-35011 # Effect of a magnetic field on experimental tumors /direct and via nervous system/ (Vliianie magnitnogo polia na eksperimental'nye opukholi /priamoe i cherez nervnuu sistem/). M. A. Ukolova and E. B. Kvakina (Rostovskii Nauchno-Issledovatel'skii Onkologicheskii Institut, Rostov-na-Donu, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 147-164. In Russian.

Ac and dc LF magnetic fields were applied either directly to tumors or to the animal's head, or combined, in a study of the effects of this treatment in grafted and induced tumors in albino rats. Tumor growth reversal, and in some cases disappearance, was observed in most cases after direct magnetic field applications, and the effect was enhanced by injections of copper sulphate with ascorbic acid, or adrenalin. Stimulation of tissue respiration, aerobic glycolysis, phosphorylation and hypothalamus activity was observed after applications to the animal's head. Hypothalamus activity is viewed as a key element in one of the mechanisms responsible for the effects of magnetic fields on tumors. V.Z.

A72-35012 # Clinical hygienic and experimental data on magnetic field effects under working conditions (Kliniko-gigienicheskie i eksperimental'nye dannye o deistvii magnitnykh polei v usloviakh proizvodstva). A. M. Vialov (Moskovskii Nauchno-Issledovatel'skii Institut, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 165-177. In Russian.

A72-35013 # Methodical and methodological characteristics of a magneto-biological experiment (Metodicheskie i metodologicheskie osobennosti magnitobiologicheskogo eksperimenta). A. A. Shul'pekova (Moskovskii Nauchno-Issledovatel'skii Institut Priborostroeniia, Moscow, USSR). In: Effect of magnetic fields on biological objects. Moscow, Izdatel'stvo Nauka, 1971, p. 178-189. In Russian.

A72-35014 Mechanisms regulating physiological functions (Mekhanizmy regulatsii fiziologicheskikh funktsii). Edited by M. I. Gol'danskaia and A. A. Antonova. Leningrad, Izdatel'stvo Nauka, 1971. 317 p. 1186 refs. In Russian.

The influence of thermal, osmotic, and chemical stimulations of the hypothalamus on food and water intake; the pathogenesis of experimental tumors in the stomach and duodenum of dogs; and clinical observations as a research method in physiology are among the topics covered in papers concerned with general problems of physiology. Other subjects include the role of inhibition in fatigue, multilevel control of movements, and physiology of single mechanoreceptors (Pacini's corpuscles).

M.V.E.

A72-35015 # The role of inhibition in the fatigue phenomenon (O roli tormozheniia v fenomene utomleniia). E. A. Asratian (Akademiia Nauk SSSR, Institut Vysheii Nervnoi Deiatel'nosti i Neurofiziologii, Moscow, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 6-8. In Russian.

Consideration of the protective and restoring roles of inhibition as an antifatigue factor, with reference to Pavlov's theories and teachings. The author's past studies are also referred to in support of the view that inhibition tends to oppose fatigue. V.Z.

A72-35016 # Influence of thermal, osmotic, and chemical stimulations on food and water intake (Vliianie termicheskogo, osmoticheskogo i khimicheskogo razdrazhenii gipotalamusa na priem pishchi i vody). P. G. Bogach (Kievskii Gosudarstvennyi Universitet, Kiev, Ukrainian SSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 16-24. 36 refs. In Russian.

A72-35017 # Clinical observations as a research method in physiology (Klinicheskie nabludeniia kak metod issledovaniia v fiziologii). I. E. Ganelina, M. Ia. Ratner (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR), and A. Ia. Iaroshevskii. In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 24-42. 77 refs. In Russian.

A72-35018 # Multilevel motion control (O mnogourovnevnom upravlenii dvizheniiami). V. S. Gurfinkel' and M. L. Shik (Akademiia Nauk SSSR, Institut Biologicheskoi Fiziki, Moscow, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 48-55. 23 refs. In Russian.

Discussion of experiments in which the state of some parts of the nervous system was investigated during natural motor activity or during simulated natural motor activity in humans and animals. Details are given on experiments on humans in sitting and standing postures in which the electrical signals of muscles were recorded during movements in an experimental stand. A controlled-motion stand for locomotive reflex studies on animals is also described. V.Z.

A72-35019 # Pharmacological effects on the central adrenergic regulation mechanisms of blood circulation (Farmakologicheskie vozdeistviia na tsentral'nye adrenergicheskie mekhanizmy regulatsii krovoobrashcheniia). V. V. Zakusov and N. V. Kaverina (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 55-63. 21 refs. In Russian.

A72-35020 # Trophic support of cardiac activity (O troficheskom obespechenii serdechnoi deiatel'nosti). V. V. Parin. In:

Mechanisms regulating physiological functions.

Leningrad, Izdatel'stvo Nauka, 1971, p. 89-95. 4 refs. In Russian.

Review of studies of the effects of higher vegetative centers, extracardial nerves and hormonal mediation agents on the cardiac activity, the state of cardiac rhythm control and cardiac arrhythmia restoration. Special attention is given to the effects of the stimulation of the trophic nuclei of the hypothalamus on these functions.

V.Z.

A72-35021 # New data on physiological adaptations to arid zones (Novye dannye o fiziologicheskikh adaptatsiakh k aridnoi zone). A. D. Slonim (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad and Novosibirsk, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 101-108. 28 refs. In Russian.

A72-35022 # Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny (O vzaimootnoshenii intero- i ekstero-tseptorov v protsesse stanovleniia reflektornykh aktov mocheispuskanii i defekatsii v ontogeneze). T. S. Lagutina (Moskovskii Oblastnoi Nauchno-Issledovatel'skii Klinicheskii Institut, Moscow, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 228-241. 15 refs. In Russian.

A72-35023 # New experimental data on the morphophysiological analysis of the adaptation phenomenon in the somatic reflex arch (Novye eksperimental'nye dannye po morfo-fiziologicheskomu analizu fenomena adaptatsii v somaticheskoi reflektornoi duge). O. S. Merkulova (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 241-257. 80 refs. In Russian.

A72-35024 # Bioelectric activity of the medulla oblongata during hypothermia and bloodletting (Bioelektricheskaiia aktivnost' prodolgovatogo mozga pri gipotermii i krovopuskaniia). T. V. Popova (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 277-292. 71 refs. In Russian.

A72-35025 # Vasomotor reflex locking level (Ob urovne zamykaniia vazomotornykh reflektsov). V. M. Khaiutin (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). In: Mechanisms regulating physiological functions. Leningrad, Izdatel'stvo Nauka, 1971, p. 292-302. 33 refs. In Russian.

Review of studies concerning the occurrence of vasomotor neuron reflexes after spinal cord cutting at various levels. Particular attention is given to studies by Schäfer et al. (1958, 1960, 1964) indicating the occurrence of bulbar vasomotor reflex locking. Other studies are also interpreted as supporting the existence of vasomotor reflex locking in the spinal cord. V.Z.

A72-35070 The visual system and 'neuronal specificity.' R. M. Gaze and M. J. Keating (Medical Research Council, National Institute for Medical Research, London, England). *Nature*, vol. 237, June 16, 1972, p. 375-378. 36 refs.

To explain how neurones make the correct connexions during development and growth, Sperry put forward his hypothesis of neuronal specificity, in which neurones are recognized by individual chemical labels. The basis for this specificity is still unclear; but

recent evidence suggests that it may be more appropriate to think in terms of 'systems matching' than of the matching of individual cells. (Author)

A72-35166 # Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status. W. E. Pepelko (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Society for Experimental Biology and Medicine, Proceedings*, vol. 140, June 1972, p. 628-632. 21 refs.

Rats were exposed for four days to inspired carbon dioxide levels of 0, 30, 60, and 90 torr combined with inspired oxygen levels of 70 or 140 torr. The purpose of the experiment was to measure the partial pressures of oxygen and carbon dioxide in the arterial blood as well as the pH and standard bicarbonate in the arterial blood of rats chronically exposed to these levels of CO₂ combined with oxygen. Results show that the arterial blood levels of oxygen increased up to an inspired CO₂ of 60 torr in the normoxic rats. At the three levels of inspired CO₂, the increased arterial CO₂ partial pressure was not influenced by hypoxia to a noticeable degree. Standard bicarbonate increased with increasing inspired CO₂ levels in all groups. However, it was consistently lower in the low-oxygen breathing rats than in the normoxic animals. Arterial partial CO₂ pressure was markedly lower in the hypoxic rats only when inspired CO₂ levels were zero. This resulted in a lower arterial blood pH in the hypoxic than in the nonhypoxic rats inspiring comparable CO₂ levels. D.F.L.

A72-35214 # Effect of lunar ground on radiation damage in mice (Vliianie lunnogo grunta na luchevoe porazhenie u myshei). V. V. Antipov, B. I. Davydov, N. A. Gaidamakin, T. S. L'vova, V. G. Petrukhin, S. N. Komarova, and E. B. Skvortsova. *Kosmicheskie Issledovaniia*, vol. 10, May-June 1972, p. 439-449. 8 refs. In Russian.

Survival rates and peripheral blood responses to gamma radiation were not changed when fine lunar rock material was introduced aerogenically, orally, or abdominally into mice. Weight gain was lower in irradiated mice after inhalation or oral intake of lunar material. Neoplasms have developed in some of the mice after contact with lunar material. V.Z.

A72-35278 Influence of space-flight factors aboard 'Zond' automatic stations on survival and mutability of chlorella cells. E. N. Vaulina, I. D. Anikeeva, I. G. Gubareva, and G. A. Shtraukh. (*Kosmicheskie Issledovaniia*, vol. 9, Nov.-Dec. 1971, p. 940-945.) *Cosmic Research*, vol. 9, no. 6, June 1972, p. 865-869. 7 refs. Translation.

'Zond' na vyzhivaemost' i mutabil'nost' kletok khlorelly. E. N. Vaulina, I. D. Anikeeva, I. G. Gubareva, and G. A. Shtraukh. *Kosmicheskie Issledovaniia*, vol. 9, Nov.-Dec. 1971, p. 940-945. 7 refs. In Russian.

A marked decrease of survival rates and much more frequent mutations were observed in chlorella cells kept in darkness in a mineral medium during the flight of Zond 5. These observations were reversed in a similar experiment on Zond 7 and were between the two extremes on Zond 6, even though the experimental conditions in all flights were maintained similar. This inconsistency is explained by causes unrelated to flight, notably by exposure of the chlorella cultures to adverse temperature variations during the transportation of the material between the laboratory and the launching and landing sites. V.Z.

A72-35279 Influence of space-flight factors aboard Soyuz-5 satellite on chlorella cells. I. D. Anikeeva and E. N. Vaulina. (*Kosmicheskie Issledovaniia*, vol. 9, Nov.-Dec. 1971, p. 946-948.) *Cosmic Research*, vol. 9, no. 6, June 1972, p. 870-872. 7 refs. Translation.

Increased proportions of cells producing anomalous numbers or nonequivalent autospores were detected in chlorella cell cultures kept in darkness in an agar-agar medium on the Soyuz 5 spaceship during its orbital flight. Survival rates and mutability were also lower in experimental cells than in control cells. It is believed however that these variations were caused by deficient experimental techniques rather than by flight-related factors. V.Z.

A72-35280 Influence of space-flight factors and ethylenimine on barley seeds. K. P. Garina and N. I. Romanova. (*Kosmicheskie Issledovaniia*, vol. 9, Nov.-Dec. 1971, p. 949-952.) *Cosmic Research*, vol. 9, no. 6, June 1972, p. 873-876. Translation.

In oat seeds carried by Soyuz 5 chromosome aberrations were more frequent and germination was faster than in control seeds. Stimulation was still higher in seeds treated with ethylenimine before the flight. Chromosome aberrations and germination normalized after post-flight storage of the exposed seeds. V.Z.

A72-35354 A new model for estimating space proton dose to body organs. R. W. Langley and M. P. Billings (McDonnell Douglas Astronautics Co., Huntington Beach, Calif.). *Nuclear Technology*, vol. 15, July 1972, p. 68-74. 9 refs. Research supported by the McDonnell Douglas Independent Research and Development Program.

It has been presumed that geometrically faithful man models are required to accurately account for the effect of body self-shielding on space variation dose to radiation-sensitive organs other than the skin and lens of the eye. It is demonstrated that a simple equivalent sphere model reproduces the results of comprehensive dose analyses that employ a detailed man model, with an accuracy sufficient for dose assessments. A correlation has been established analytically that holds for the full range of observed solar proton spectra and for a range of vehicle shielding worths from 0 to 10 g/sq cm of aluminum. Equivalent sphere model parameters are presented for the blood forming organs, the gastro-intestinal tract, and the testes. (Author)

A72-35376 # Brief survey of the problems of space radiobiology and radiation safety in space flights. Iu. G. Grigor'ev and C. A. Tobias. *COSPAR Information Bulletin* no. 62, June 1972, p. 34-48.

Radiations in space which are of particular consequence to manned space flight are considered, giving attention to galactic cosmic radiation, the earth radiation belt, solar flares, radiation from planetary and lunar surfaces, and radiations from man-made sources. Problems to be solved in connection with the exposure of the astronaut to the radiations are related to the establishment of allowable exposures, the determination of the quality factor, the determination of the distribution factor, the assessment of the effective dose, the radiobiological effect and modifying effect of space flight factors, and the study of specialized organ systems of man where radiation injury may significantly affect the astronaut's performance. The possibility of using pharmacological means of protection is also examined. G.R.

A72-35396 Retina - Ultrastructural alterations produced by extremely low levels of coherent radiation. D. O. Adams, E. S. Beatrice, and R. B. Bedell (U.S. Army, Joint Army Medical Research and Development Command, Frankford Arsenal, Philadelphia, Pa.). *Science*, vol. 177, July 7, 1972, p. 58-60. 16 refs.

Results of irradiation with a Q-switched ruby laser of both retinas from two rhesus monkeys, with study of the ultrastructure of the irradiated areas. The data suggest that very low levels of energy from a ruby laser incident upon the retina can produce ultrastructural alterations in the outer segments of the rods and cones there.

The most surprising result of this study is the presence of damage in areas subjected to very small amounts of coherent radiation. Two possible pathogenetic bases for the observed damage are postulated.
F.R.L.

A72-35397 * Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system. E. Haus (St. Paul-Ramsey Hospital, St. Paul, Minn.), F. Halberg, J. F. W. Kühl, R. B. Sothorn, R. N. Shiotsuka, D. S. Hwang (Minnesota, University, Minneapolis, Minn.), L. E. Scheving, J. E. Pauly (Arkansas, University, Little Rock, Ark.), and S. Cardoso (Tennessee, University, Memphis, Tenn.). *Science*, vol. 177, July 7, 1972, p. 80-82. 21 refs. Research supported by the St. Paul-Ramsey Hospital Medical Research and Education Foundation and NASA; Grant No. PHS-5-K6-GM-13,981.

A72-35459 # Eye movements as the basis of spatial vision and as a model of behavior (Dvizheniia glaz kak osnova prostranstvennogo zreniia i kak model' povedeniia). B. Kh. Gurevich. Leningrad, Izdatel'stvo Nauka, 1971. 227 p. 309 refs. In Russian.

A critical analysis is made of current data and theories in the field of spatial vision mechanisms. The rotation of the eye - especially in complete darkness - is proposed as an elementary model for the experimental development of this analysis. Detailed recordings of eye movements in darkness are obtained. These recordings prove that eye movements are regulated by the target not only in the case of rotation toward a visible object but even in complete darkness. It is concluded that Helmholtz's innervation hypothesis and other mechanistic conceptions of localization and behavior are invalid. The recordings revealed a universal law of eye jumps and a hierarchical (two-level) character of the target control of eye rotations. A model scheme of visual fixation changes and of the bases of spatial vision is proposed, as well as a corresponding conceptual model of behavior and its control involving the participation of reinforced temporary brain connections.
A.B.K.

A72-35460 # Intracranial blood circulation under conditions of accelerations and weightlessness (Vnutricherepnoe krovoobraschenie v usloviakh peregruzok i nevesomosti). Iu. E. Moskalenko, G. B. Vainshtein, and I. I. Kas'ian. Moscow, Izdatel'stvo Meditsina, 1971. 279 p. 628 refs. In Russian.

A detailed study is made of the disturbances of the intracranial blood circulation occurring in response to accelerations and weightlessness. An analysis is made of the intracranial blood circulation system under normal conditions, on the basis of which the patterns of change in the brain blood flow during exposure of the organism to space flight factors are ascertained. The special features of the regulation of the brain blood circulation are considered, as well as the mechanisms ensuring homeostasis of the brain blood circulation under conditions of a changed gravitational field. Special attention is devoted to methodological problems involved in studying the brain blood circulation during exposure of the organism to longitudinal and transverse accelerations and to weightlessness. Methods of biophysical analysis of the phenomena occurring in the intracranial blood circulation system are employed, including mathematical modeling of this system.
A.B.K.

A72-35462 Oculomotor coordination following REM and non-REM sleep periods. R. J. Berger and J. M. Walker (California, University, Santa Cruz, Calif.). (Association for the Psychophysiological Study of Sleep, International Congress, 1st, Bruges, Belgium, June 1971.) *Journal of Experimental Psychology*, vol. 94, July 1972, p. 216-224. 19 refs. NSF Grant No. GB-8782.

The hypothesis that one function of rapid eye movement (REM) sleep might be to maintain facilitation of coordinated eye movements throughout sleep was tested. Twelve male Ss performed oculomotor tracking tasks after being awakened alternately at the onset and end of REM periods (counterbalanced across Ss), which required horizontal saccadic versional, smooth versional, and vergence eye movements. Imbalances between the two eyes were measured directly from the output of an analog difference circuit whose inputs were the horizontal electrooculogram of each eye. Ocular imbalances at the onset compared with the end of REM periods were of significantly greater magnitude and number during the saccadic version and smooth version tasks, but did not differ during the vergence task. A control measure of oculomotor reaction time of saccades to step shifts of the target did not vary between the onset and end of REM periods. The results were consistent with the initial hypothesis.
(Author)

A72-35463 Behavioral properties of somatosensory-motor interhemispheric transfer. D. Muram and A. Carmon (Jerusalem, Hebrew University, Jerusalem, Israel). *Journal of Experimental Psychology*, vol. 94, July 1972, p. 225-230. 11 refs. Research supported by the Israeli Air Force.

A72-35550 # Performance measurement in helicopter training and operations. W. W. Prophet (Human Resources Research Organization, Alexandria, Va.). *American Psychological Association, Annual Meeting, 79th, Washington, D.C., Sept. 1971, Paper. 17 p. 13* refs. Grant No. DAHC19-70-C-0012. (PP-10-72)

A flight performance research program, concerned primarily with the measurement of human functioning and performance, is described. Particular attention is given to a series of relatively objective flight performance checklists, termed Pilot Performance Description Records (PPDR), in constructing which each maneuver was analyzed in detail, and as many items or scales as possible describing specific pilot and aircraft behaviors during the maneuver were developed. The uses of the PPDR as part of a training quality control system are discussed. Individual critical maneuvers are examined, which make it possible to assess the causes of deviant performance at a detailed level and to develop means of coping with them. Approaches based on automated performance monitoring in flight simulators are also examined.
V.P.

A72-35647 * Brain tumors in irradiated monkeys. W. Haymaker, J. Miquel (NASA, Ames Research Center, Moffett Field, Calif.), and L. J. Rubinstein (Stanford University, Stanford, Calif.). *Acta Neuropathologica*, vol. 20, 1972, p. 267-277. 9 refs.

A study was made of 32 monkeys which survived one to seven years after total body exposure to protons or to high-energy X rays. Among these 32 monkeys there were 21 which survived two years or longer after exposure to 200 to 800 rad. Glioblastoma multiforme developed in 3 of the 10 monkeys surviving three to five years after receiving 600 or 800 rad 55-MeV protons. Thus, the incidence of tumor development in the present series was far higher than the incidence of spontaneously developing brain tumors in monkeys cited in the literature. This suggests that the tumors in the present series may have been radiation-induced.
(Author)

A72-35688 Peripheral contrast thresholds for moving images. J. G. Rogers (Hughes Aircraft Co., Culver City, Calif.). *Human Factors*, vol. 14, June 1972, p. 199-205. 20 refs.

Evaluation of perceptual enhancement for image motion in the visual periphery by threshold measurements with a moving-bar stimulus. Lowered peripheral thresholds were found for both

forward and backward image movement with no significant elevation of the contrast threshold for an image in motion out to 55 deg eccentricity from the fovea. Either real or phi-phenomenon movement is recommended for the display of emergency or mission-critical signals. (Author)

A72-35689 The relative importance of contrast and motion in visual detection. H. E. Petersen and D. J. Dugas (RAND Corp., Santa Monica, Calif.). *Human Factors*, vol. 14, June 1972, p. 207-216. 8 refs.

The relative roles of contrast and motion in the detection of targets were investigated using a television display of an artificial target inserted in several different backgrounds of varying complexity. Independent effects of both contrast and motion on the detectability of targets were found. The magnitude of these effects can be accounted for in the detection probability function by modifying the exponent with a linear contrast term and a second-power velocity term. At target speeds greater than about 5 deg/sec, the detection probability began to level off, probably due to interference of the boundaries of the display. Single-fixation experiments confirmed a larger detection field for moving targets than for static, but also demonstrated a gradual increase in the fixation time required to detect a target as a function of its distance from the fixation point. (Author)

A72-35690 Determining the detectability range of camouflaged targets. H. E. Guttman and R. G. Webster (Sandia Laboratories, Albuquerque, N. Mex.). *Human Factors*, vol. 14, June 1972, p. 217-225. 7 refs. AEC-supported research.

This paper describes a quick economical method for determining the maximum range at which camouflaged targets can be detected. The method produces results which agree within 10% of those obtained by conventional psychophysical methods. (Author)

A72-35691 # Detection and recognition of colored signal lights. R. E. Reynolds (Edinboro State College, Edinboro, Pa.), R. M. White, Jr. (Miami University, Oxford, Ohio), and R. L. Hilgendorf (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Human Factors*, vol. 14, June 1972, p. 227-236. 9 refs. Contract No. AF 33(615)-1212.

Experimental investigation of the effects of stimulus color, background color, and level of ambient illumination upon the time required by a subject to detect a visual signal and make a response, as well as on his ability to identify correctly the color of the signal. The results include the finding that detection and identification are more difficult under bright ambient illumination. M.V.E.

A72-35692 * Congruent and spurious motion in the learning and performance of a compensatory tracking task. J. G. Guercio and R. L. Wall (San Jose State College, San Jose, Calif.). *Human Factors*, vol. 14, June 1972, p. 259-269. 24 refs. Grant No. NGL-05-046-002.

Examination of the importance of congruent and spurious yaw motion in compensatory tracking by eight airline pilots. The pilots, seated erect in the Ames man-carrying rotation device (MCRD), tracked with $k/s+1$ and $k/s(s+1)$ vehicle dynamics in fixed- and moving-base simulation. Following the learning phase of the experiment, five levels of spurious angular acceleration were superimposed on the motion of the MCRD. Learning of the tracking task was found to be a function of both vehicle dynamics and mode of simulation. The presence of congruent motion information reduced learning time in $k/s(s+1)$ vehicle dynamics and resulted in lower tracking error in both vehicle dynamics. The spurious angular accelerations resulted in an increase in pilot tracking error; however, the relationship between the magnitude of the acceleration and its

effect was highly complex. The data suggest that the minimal disturbance level for spurious angular accelerations during tracking is below 0.4 deg/sec. (Author)

A72-35761 * Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea. W. W. Doschek and B. Kok (Martin Marietta Research Institute for Advanced Studies, Baltimore, Md.). *Biophysical Journal*, vol. 12, July 1972, p. 832-838. 13 refs. Contracts No. AT(30-1)-3706; No. NASw-2183.

A72-35821 Acquired complete right bundle branch block without overt cardiac disease - Clinical and hemodynamic study of 37 patients. M. C. Lancaster, E. Schechter, and G. K. Massing (USAF, School of Aerospace Medicine, Brooks AFB; USAF, Medical Center, Lackland AFB, Tex.). *American Journal of Cardiology*, vol. 30, July 11, 1972, p. 32-36. 29 refs.

Evaluation of 37 men (mean age 42 years) with acquired right bundle branch block by complete electrocardiographic testing, a glucose tolerance test, determination of serum lipids and total body water, chest roentgenograms, left and right heart catheterization including coronary cineangiography, and coronary sinus catheterization. No patient had significant myocardial lactate production at rest, and in no case did the coronary sinus lactate level during exercise exceed the arterial level. Significant large coronary arterial obstruction could have been an etiologic determinant in only 1 of the 37 patients. The almost consistent and unique association of acquired right bundle branch block with increased end-diastolic ventricular pressure at rest or with exercise, or both, is as yet unexplained but suggests the presence of a mild diffuse abnormality of the ventricular myocardium, including some portion of the right bundle branch. (Author)

A72-35822 Work capacity and physiologic responses to work - Men born in 1913. G. Grimby, J. Bjure, M. Aurell, B. Ekstrom-Jodal, G. Tibblin, and L. Wilhelmsen (Goteborg, University, Goteborg, Sweden). *American Journal of Cardiology*, vol. 30, July 11, 1972, p. 37-42. 18 refs. Research supported by Forenade Liv.

Results of a maximal exercise test performed by a group of 793 54-yr-old men. The purpose was to increase the basic data of a prospective study of ischemic heart disease and other pathological conditions, to study cross-sectionally the physical performance of the population (the occurrence of angular pain and electrocardiographic anomalies at standardized work loads, comparing these data to other relevant data in the population), and to collect randomly selected control material for comparing groups with different diseases, e.g., patients with myocardial infarction. The study appears to show that a high percentage of 54-yr-old men can perform maximal exercise without demonstrable evidence of increased probability of cardiovascular hazards. F.R.L.

A72-35835 * Lipid composition of growing and starving cells of *Arthrobacter crystallopoietes*. L. L. Kostiw, C. W. Boylen, and B. J. Tyson (NASA, Ames Research Center, Exobiology Div., Moffett Field, Calif.). *Journal of Bacteriology*, vol. 111, July 1972, p. 103-111. 57 refs.

A72-35915 # The effect of chlordiazepoxide on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man. D. P. Austen, B. A. Gilmartin (City University, London, England), and P. Turner (St. Bartholomew's Hospital, London, England). *British Journal of Physiological Optics*, vol. 26, no. 3, 1971, p. 161-165. 8 refs.

A72-35916 # The tracking of targets located outside of Panum's area. R. W. Reading (Indiana University, Bloomington, Ind.). *British Journal of Physiological Optics*, vol. 26, no. 3, 1971, p. 217-227. 15 refs. Contract No. DA-49-193-MD-2706.

Experimental study of the usefulness of binocular distance perception from diplopic images, using three subjects and a described apparatus and procedure. The results indicate that the localization of real targets moving at 50 to 80 cm from the entrance pupils and viewed while fixating a target at 123 cm shows superiority for a binocular viewing condition that permits extrahoroptical distance perception to act as a clue to spatial localization. M.V.E.

A72-35917 * CPPB and vasopressin secretion. W. H. Moran, Jr. (West Virginia University, Morgantown, W. Va.). *Anesthesiology*, vol. 34, June 1971, p. 501-504. 11 refs. Grant No. NGR-49-001-019.

Discussion of the role of vasopressin (or 'antidiuretic hormone') secretory control system in the maintenance of central vascular volume, and critical comments about the latest paper by Barratz et al. (1971) on the interrelation of antidiuretic hormone (ADH) and fluid balance during continuous positive pressure breathing (CPPB) in dogs. It is felt that, while the increase in plasma ADH levels occurring with CPPB has been more carefully defined in this last paper than previously, still more accurate definitions could be obtained under experimental conditions modified in accordance with presented suggestions. M.V.E.

A72-35925 * Analysis of vegetable seedlings grown in contact with Apollo 14 lunar surface fines. C. H. Walkinshaw (U.S. Forest Service, Washington, D.C.; NASA, Manned Spacecraft Center, Houston, Tex.) and P. H. Johnson (Brown and Root-Northrop, Inc., Houston, Tex.). *HortScience*, vol. 6, Dec. 1971, p. 532-535.

Study of plant seedlings treated with lunar material, grown for 14 to 21 days, and then subjected to chemical analyses and other measurements. The purpose of the study was to determine whether plants growing in contact with lunar-surface fines contained a different elemental composition compared with untreated seedlings. The results indicate a direct interaction between germfree plants and lunar material. Treated plants dissolved and absorbed significant quantities of Al, Fe, and Ti from the lunar fines. Cabbage and Brussel sprouts were particularly efficient in the dissolution and absorption of Mn. M.V.E.

A72-35938 * Lunar horticulture. C. H. Walkinshaw (NASA, Manned Spacecraft Center, Houston, Tex.). *HortScience*, vol. 6, Dec. 1971, p. 518.

Discussion of the role that lunar horticulture may fulfill in helping establish the life support system of an earth-independent lunar colony. Such a system is expected to be a hybrid between systems which depend on lunar horticulture and those which depend upon the chemical reclamation of metabolic waste and its resynthesis into nutrients and water. The feasibility of this approach has been established at several laboratories. Plants grow well under reduced pressures and with oxygen concentrations of less than 1% of the total pressure. The carbon dioxide collected from the lunar base personnel should provide sufficient gas pressure (approx. 100 mm Hg) for growing the plants. M.V.E.

A72-35943 Obedience to rotation-indicating visual displays as a function of confidence in the displays. B. E. Johnson and A. C. Williams, Jr. (Illinois University, Urbana, Ill.). *Aviation Research Monographs*, vol. 1, Dec. 1971, p. 11-25. 7 refs.

Investigation of the relationship between the confidence of a pilot in his visual display and his susceptibility to disorientation. Experiments were carried out under four different experimental conditions at both high and low levels of confidence in the visual

information presented. Differential responses to the various experimental conditions are found at both confidence levels, thus suggesting the existence of inherent differences in the credibility of the information presented by the four displays. An attempt is made to assess the role of the quality of the visual display and the apparent direction of movement of the display in contributing to the differences noted. Also, an analysis is made of the agreement between vestibular and visual cues during acceleration, constant-speed rotation, and deceleration. A.B.K.

A72-35944 Meaningful shape coding for aircraft switch knobs. G. K. Slocum, S. N. Roscoe (Hughes Aircraft Co., Culver City, Calif.), and B. H. Williges. *Aviation Research Monographs*, vol. 1, Dec. 1971, p. 27-40. 16 refs.

Evaluation of the speed and accuracy of identification and operation of sets of knobs that were either meaningfully shape coded, arbitrarily shape coded, or noncoded. An analysis is made of the substitution errors with the different knob codings, the time required to identify and manipulate the knobs, and the interference of the coding with performance on other concurrent tasks. It is found that significantly fewer errors were made while using the meaningfully top-coded knobs than while using either the arbitrarily side-coded knobs or the noncoded knobs during the initial block of trials. During the second trial block, the numbers of substitution errors did not differ significantly among the three types of knobs. It is also found that both sets of coded knobs required significantly less discrimination and total time than did the noncoded knobs. However, the meaningfully top-coded knobs required more manipulation time than the other two types of knobs. Finally, it is found that meaningful top coding produced less loading-task interference than did noncoding. A.B.K.

A72-35945 Time-compressed displays for target detection. L. A. Scanlan, S. N. Roscoe (Hughes Aircraft Co., Culver City, Calif.), and R. C. Williges. *Aviation Research Monographs*, vol. 1, Dec. 1971, p. 41-66. 25 refs.

Investigation of visual time-compression phenomena, using a simulated radar display with electronically generated targets, noise, and clutter in a target detection task. Six time-compression ratios between unity and infinity were used, three levels of random noise, and two levels of clutter. Radar target detection performances are found to differ reliably as a function of each primary experimental variable, including number of stored frames, time-compression ratio, noise level, and clutter level. Performances associated with two secondary experimental variables - target direction and target speed - show no significant main effect. The data presented are regarded as supporting the belief that significant improvement in an observer's ability to detect a target can be realized by matching the display to the observer's perceptual abilities. A.B.K.

A72-35963 Effect of posture on heat acclimatization in man. J. T. Maher, D. E. Bass, D. D. Heistad, E. T. Angelakos, and L. H. Hartley (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.; Hahnemann Medical College, Philadelphia, Pa.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 8-13. 25 refs.

Cardiovascular, thermoregulatory, and sympathoadrenal responses of two matched groups of four men each were compared during daily 90-min periods of upright and supine bicycle exercise at 49/27 C dry/wet bulb. The groups underwent 8 consecutive days of exercise in the heat at the same work load and level of oxygen consumption, preceded and immediately followed by a uniformity trial in which they walked on a treadmill at 5.6 km/hr. The group which exercised while supine performed with lower mean rectal temperatures and lower heart rates than the group which exercised while upright. Sweat rates were similar for the two groups. It appears that the reduced gravitational stress of the recumbent position

permits attainment of a level of acclimatization to work in the heat similar to that achieved in the upright posture with the benefit of less physiologic strain during induction of acclimatization. (Author)

A72-35964 * 'Diving reflex' in man - Its relation to isometric and dynamic exercise. S. A. Bergman, Jr., J. K. Campbell, and K. Wildenthal (Texas, University, Dallas, Tex.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 27-31. 19 refs. Grants No. PHS-HL-06296; No. NGR-44-012-151.

To test the influence of physical activity on the diving reflex, 10 normal men held their breath with their faces immersed in 15°C water during rest, bicycle exercise, and sustained isometric handgrip contraction. At all conditions, a slight but statistically significant elevation of blood pressure and a marked decrease in heart rate occurred during each dive. During moderate bicycle exercise heart rate fell more rapidly than at rest and the final level of bradycardia approached that achieved at rest, despite the fact that pre-dive heart rates were much higher during exercise. When diving occurred in combination with isometric exercise, bradycardia was less severe than during resting dives and final heart rates could be represented as the sum of the expected responses to each intervention alone. In all conditions apnea without face immersion caused bradycardia that was less severe than during wet dives. (Author)

A72-35965 Transient ventilatory response to graded hypercapnia in man. W. J. Reynolds, H. T. Milhorn, Jr., and G. H. Holloman, Jr. (Mississippi, University, Jackson, Miss.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 47-54. 17 refs. Grant No. NIH-HE-11678.

The transient ventilatory responses of a group of normal male volunteers to mixtures of 3, 5, 6, and 7% CO₂ in air were determined by continuous recording of expiratory flow, oxygen tension, and carbon dioxide tension with an FM magnetic tape recorder. The analog data were then digitized and calculations performed by a digital computer to yield breath-by-breath values for tidal volume, respiratory frequency, minute ventilation, and alveolar oxygen and carbon dioxide tension. Minute ventilation was observed to increase smoothly at all stimulus levels. Tidal volume underwent a rapid on-transient and maintained a stable plateau thereafter, while respiratory frequency increased much more slowly. (Author)

A72-35966 * Disproportional changes in hematocrit, plasma volume, and proteins during exercise and bed rest. W. van Beaumont (St. Louis University, St. Louis, Mo.), J. E. Greenleaf, and L. Juhos (NASA, Ames Research Center, Laboratory of Human Environmental Physiology, Moffett Field, Calif.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 55-61. 22 refs.

The interrelationships between the changes in plasma volume, hematocrit, and plasma proteins during muscular exercise and bed rest were investigated. Proportionally, the changes in hematocrit are always smaller than the changes in plasma volume. For this reason changes in the concentration of blood constituents can only be quantitated on the basis of plasma volume changes. During short periods of intensive exercise, there was a small loss of plasma proteins. With prolonged submaximal exercise there was a net gain in plasma protein, which contributes to stabilization of the vascular volume. Prolonged bed rest induced hypoproteinemia; this loss of plasma protein probably plays an important role in recumbency hypovolemia. (Author)

A72-35967 * Effects of diffusion impairment on O₂ and CO₂ time courses in pulmonary capillaries. P. D. Wagner and J. B. West (California, University, La Jolla, Calif.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 62-71. 41 refs. Grants No. NGL-05-009-109; No. PHS-HE-13687-01.

Simultaneous time courses for O₂ and CO₂ exchange along the capillary have been calculated for homogeneous lungs, allowing for O₂-CO₂ interactions, dissolved O₂, and chemical reaction rates. As diffusing capacity (Dl) was reduced, the transfer of CO₂ and O₂ was impaired by similar amounts, in spite of the 20-fold greater diffusing capacity for CO₂. The reason why CO₂ is affected so much is that the slope of the content against partial pressure is so much greater in blood than tissue for this gas. Because of the shapes of their respective dissociation curves, O₂ transfer was most affected at normal ventilation-perfusion ratios, whereas CO₂ was most affected at high ratios. Exercise exaggerated the impairment of transfer of both gases. (Author)

A72-35968 Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise. B. W. Lassers, M. L. Wahlqvist, L. Kaijser, and L. A. Carlson (Uppsala, University, Uppsala; Karolinska Hospital; King Gustav V Research Institute, Stockholm, Sweden). *Journal of Applied Physiology*, vol. 33, July 1972, p. 72-80. 49 refs. Swedish Medical Research Council Grants No. 19X-204-06; No. 19X-204-07.

A72-35969 Skin temperatures in warm environments and the control of sweat evaporation. Y. Houdas, J. Colin, J. Timbal, C. Boutelier, and J.-D. Guieu (Lille, Université, Lille; Aerospace Medical Laboratory, Brétigny-sur-Orge, Essonne, France). *Journal of Applied Physiology*, vol. 33, July 1972, p. 99-104. 26 refs.

A72-35970 Gas-induced osmosis in the lung. B. A. Hills (Duke University, Durham, N.C.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 126-129. 17 refs. Contract No. N00014-67-A-0251-0015.

A preferential retention of water, and even fluid expulsion, has been demonstrated in lungs ventilated with a normoxic mixture of nitrous oxide compared with contralateral controls separately ventilated with air under otherwise identical conditions. This is considered a manifestation of gas-induced osmosis. The probable magnitude of such osmotic pressures is calculated and discussed as a possible factor influencing homeostasis. (Author)

A72-35971 Reproducibility of indirect /CO₂/ Fick method for calculation of cardiac output. E. Zeidifard, M. Silverman, and S. Godfrey (Institute of Diseases of the Chest, London, England). *Journal of Applied Physiology*, vol. 33, July 1972, p. 141-143. 19 refs. Research supported by the Brompton Hospital Research Fund and Fisons Pharmaceuticals, Ltd.

Ten normal subjects, aged between 12 and 30 years, performed steady-state exercise tests on a bicycle ergometer at 1- to 3-day intervals. Measurements were made at various work loads between 25% and 75% of maximum working capacity. Mixed venous carbon dioxide tension was measured from the plateau obtained during rebreathing and cardiac output was calculated by the indirect (CO₂) Fick method. The coefficients of variation of minute ventilation, gas exchange, heart rate, and cardiac output were less during exercise than at rest; at an oxygen consumption of 1,200 ml/min, the coefficients of variation were 5.7% for cardiac output, 6.8% for heart rate, and 5.6% for stroke volume. (Author)

A72-35972 Flow limitation in a collapsible tube. R. K. Lambert and T. A. Wilson (Minnesota, University, Minneapolis, Minn.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 150-153. 12 refs. PHS-supported research.

A mathematical model for flow through a collapsible tube is presented which predicts that flow limitation should occur as the

pressure at the exit of the tube is reduced. Experimental measurements of flow through a segment of Penrose drainage tubing agree with the prediction of the model for the case where the equal pressure point occurs at the entrance of the tube segment but the measured flow is less than the predicted flow for the case where the tube is collapsed over its entire length. Unsteady flows were observed when the equal pressure point was situated within the tube. (Author)

A72-35973 Algorithms for selected blood acid-base and blood gas calculations. L. J. Thomas, Jr. (Washington University, St. Louis, Mo.). *Journal of Applied Physiology*, vol. 33, July 1972, p. 154-158. 27 refs. Grants No. PHS-HE-00082; No. NIH-RR-00396.

A72-36025 Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia. C. L. Pelletier and J. T. Shepherd (Mayo Clinic and Mayo Foundation, Rochester, Minn.). *American Journal of Physiology*, vol. 223, July 1972, p. 97-103. 22 refs. Research supported by the Medical Research Council of Canada; Grant No. PHS-HE-5883.

A72-36032 Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971. Meeting sponsored by the Ballistocardiograph Research Society. Edited by D. H. Jackson (Alabama, University, Birmingham, Ala.). Basel, S. Karger AG (Bibliotheca Cardiologica, No. 29), 1972. 116 p. \$10.95.

Subjects related to assisted circulation are discussed, giving attention to questions of body acceleration synchronous with the heartbeat, hemodynamic effects of BASH, and an analysis of assisted circulation. Topics in the field of experimental and clinical ballistocardiography considered include a brief critique of the direct body ballistocardiographic method, the clinical simulation of the ballistocardiogram from pressure pulse measurements, the computer simulation of human ballistocardiogram reading, and a new approach to Bcg simulation.

G.R.

A72-36033 Hemodynamic effects of BASH - Body acceleration synchronous with the heartbeat. J. V. Tyberg, W. W. Parmley, S. H. Salzman, and H. J. C. Swan (California, University, Los Angeles, Calif.). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.* Basel, S. Karger AG, 1972, p. 6-13. Grant No. PHS-5-S01-RR-05468.

An investigation was conducted to evaluate more directly than in previous studies the hemodynamic effects of BASH in acutely-prepared dogs. Short periods of BASH applied to alternate heart beats were studied. In other tests involving normal human volunteers the effects of BASH on ventilation, arterial blood pressure, and heart rate were studied during 15-min intervals of BASH. BASH was also applied asynchronously in an attempt to explore the mechanism of observed changes. A patient study concerning a 60-year-old man with an acute myocardial infarction is also discussed. After baseline hemodynamics were obtained, the patient was subjected to intermittent periods of footward BASH for about 5 hr.

G.R.

A72-36034 Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients. M. A. H. W. Schotteleindreier and F. A. Rodrigo (Leiden, University Hospital, Leiden, Netherlands). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.* Basel, S. Karger AG, 1972, p. 35-43. 16 refs.

A study was conducted to correlate the ballistocardiogram (Bcg) with other advanced techniques presently in use for the evaluation of coronary heart disease. The tests considered included the exercise tolerance test, expressed in maximum oxygen consumption, maximum Watts performance, and maximum heart rate. Selective coronary angiograms and left ventriculograms were also considered together with the ballistocardiogram. The results obtained in the study are discussed. The Bcg is found to be a good convenient test for studying the heart function in cases of coronary heart disease. More information is obtained on the basis of the Bcg than from the exercise tolerance test.

G.R.

A72-36035 A quantitative relationship between the H-I slope of the head-foot Bcg and the initial acceleration of flow in man. J. Baan, J. H. Manchester, and J. C. Shelburne (Pennsylvania, University, Hospital, Philadelphia, Pa.). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.* Basel, S. Karger AG, 1972, p. 55-69. 22 refs. Grants No. NIH-HE-08805; No. NIH-HE-05896.

A mathematical model for the early part of ejection is discussed. The model is based on the theory of the displacement ballistocardiogram (Bcg) considered by Noordergraaf (1956). It is assumed that the heart's center of gravity does not move during early ejection. A relationship between aortic root pressure and Bcg is also considered, taking into account the Navier-Stokes equation for the time-dependent flow of an incompressible fluid. Preliminary results obtained in patients during left heart catheterization are reported. The results show the general validity of both models.

G.R.

A72-36036 Some preliminary observations on the correlation of the high frequency /acceleration/ direct-body ballistocardiogram with the apex cardiogram, carotid pulse and their derivatives. N. J. Winer (Lenox Hill Hospital, New York, N.Y.). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.*

Basel, S. Karger AG, 1972, p. 74-85. 9 refs.

Research supported by the Florence G. Heller Foundation.

A72-36037 Computer simulation of human ballistocardiogram reading. W. K. Harrison (Johns Hopkins University, Baltimore, Md.). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.* Basel, S. Karger AG, 1972, p. 86-91. Grant No. NIH-HE-13060.

The computer analysis procedure described attempts to simulate both subjective human evaluations and the objective manual measurements. Correlation coefficients are used in the computer program for a comparison of the heartbeat with an ideal pattern. A search is conducted for Bcg wave tips in particular relation to the cardiac cycle. Computer processing steps are discussed together with a record reading algorithm. Successive heartbeats are processed until the complete sequence has been completed. It is pointed out that epoch detection from the smoothed carotid pulse derivative has been reliable in the presence of appreciable heartbeat-to-heartbeat variability.

G.R.

A72-36038 A new approach to Bcg simulation. I. Tomek (Alberta, University, Edmonton, Alberta, Canada). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.* Basel, S. Karger AG, 1972, p. 92-101.

The new approach makes use of a digital computer. This has a number of advantages. Thus, segments of vessels which must be

simulated by lumped parameters in the analog computer can be simulated as having distributed parameters. The results obtained can be used for Bcg simulation with the aid of Fourier series for arbitrary pressure or flow input waveforms. Some features of the suggested approach are discussed in detail. G.R.

A72-36039 **Body dynamics and ballistocardiogram.** E. K. Franke (Cincinnati, University, Cincinnati, Ohio). In: *Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.*

Basel, S. Karger AG, 1972, p. 102-106. 6 refs. Grant No. NIH-HE-12025.

A two-component body model in ballistocardiography which was examined by Franke and Braunstein (1967, 1968) is considered. The essential features of the model are briefly recounted. The transfer function of the body model of a given subject can be computed with the aid of certain parameters. It is found that the initial part of the Bcg is the source of the least distorted and most quantitative information on the left ventricular performance. G.R.

A72-36312 **Quantitative decision criteria for identification of visual evoked responses obtained during binocular rivalry.** J. R. Bourne and R. Fox (Vanderbilt University, Nashville, Tenn.). In: *Scanning the spectrum; Proceedings of the Tenth Annual Region 3 Convention, Knoxville, Tenn., April 10-12, 1972.*

New York, Institute of Electrical and Electronics Engineers, Inc., 1972, p. H1-1 to H1-4. 12 refs. NSF Grant No. GK-27863.

A72-36313 **Controlling microbial inactivation environments.** V. L. Dugan (Sandia Laboratories, Albuquerque, N. Mex.). In: *Scanning the spectrum; Proceedings of the Tenth Annual Region 3 Convention, Knoxville, Tenn., April 10-12, 1972.*

New York, Institute of Electrical and Electronics Engineers, Inc., 1972, p. I2-1, I2-2. 5 refs. AEC-supported research.

This paper illustrates a simple application of modern optimal control theory in a problem of modern environmental microbiology. The problem investigated is that of defining an 'optimum' temperature profile for the inactivation of a microbial spore crop by a composite environment of heat and gamma radiation. The selection of the optimum temperature profile is based upon a quadratic performance criterion and is determined using numerical techniques. One set of profiles thus determined is shown to closely simulate a natural heat-up profile and to provide a lower thermal dose than a constant temperature environment which provides the same degree of inactivation. (Author)

A72-36400 # **Frontal cerebrum region and elementary mental activity (Lobnaia oblast' mozga i elementarnaia rassudochnaia deiatel'nost').** O. S. Adrianov (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR) and L. N. Molodkina (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). *Priroda*, no. 6, 1972, p. 40-46. 21 refs. In Russian.

Discussion of experiments which were conducted in an attempt to explore the intelligence of animals and their ability of extrapolation to foresee the coming events. The topics include the general functions of frontal cerebrum regions, the participation of these regions in the elementary prognostic activity, the relation between emotions and mind, and the lobectomy paradox. V.Z.

A72-36424 # **The imaging properties of the positron camera (Die Abbildungseigenschaften der Positronenkamera nach Anger).** W. J. Lorenz, O. Krauss, H. Luig, H. Ostertag, and P. Schmidlin (Deutsche Krebsforschungszentrum, Heidelberg, West Germany).

Radiobiologia - Radiotherapia, vol. 13, no. 2, 1972, p. 251-258. In German.

A72-36425 # **Mathematical methods for improving the significance of scintigrams (Mathematische Methoden zur Verbesserung der Aussagekraft von Szintigrammen).** W. J. Lorenz, H. Luig, H. G. Meder, P. Pistor, P. Schmidlin, and G. Walch (Deutsche Krebsforschungszentrum; IBM Deutschland, Heidelberg, West Germany). *Radiobiologia - Radiotherapia*, vol. 13, no. 2, 1972, p. 259-264. 14 refs. In German.

A72-36435 * **The influence of clinostat rotation on the fertilized amphibian egg.** J. W. Tremor and K. A. Souza (NASA, Ames Research Center, Moffett Field, Calif.). *Space Life Sciences*, vol. 3, June 1972, p. 179-191. 31 refs.

Study in which unrestrained, fertilized eggs of *Rana pipiens* and *Xenopus laevis* were rotated in a plane parallel to the normal gravity vector. In *R. pipiens* rotation at 1/4 rpm for five days at 18 C produced a significantly increased number of commonly occurring abnormalities. Rotation at 1/15, 1/8, 1, 2, 5 and 10 rpm did not significantly affect normal development. *X. laevis* eggs reacted similarly. *R. pipiens* eggs were most sensitive to rotation at 1/4 rpm when exposure was initiated before first cleavage. Mixing of intracellular constituents apparently occurred only at 1/4 rpm in *R. pipiens* (of the clinostat speeds studied), and may have been the cause of the increased abnormality observed at this rate. (Author)

A72-36436 * **Habitability factors in a rotating space station.** B. D. Newsom (NASA, Manned Spacecraft Center, Houston, Tex.). *Space Life Sciences*, vol. 3, June 1972, p. 192-197. 12 refs.

Factors aiding man to adjust to the artificial gravity environment of a rotating space station in orbit are considered. From recent experiments reported by Newsom et al. (1966), it is known that, if man is taken stepwise into a rotating environment, he can adjust (without becoming ill) to spin rates above that required for maintaining an artificial gravity environment in a space station. Little or no data are available, and much work remains to be done in the area of prehabitation and the rate at which habituation is extinguished. At least three factors must be considered in the design of an artificial gravity space station, and these factors directly affect the degree of habitability of the space-station environment. The three factors are rotation rate, stability, and Coriolis force. M.V.E.

A72-36437 * **The effects of various cure cycles upon the viability of *Bacillus subtilis* var. niger spores within solid propellant.** W. A. Brewer, W. W. Paik, C. L. Robillard, R. H. Green (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.), and C. D. Smith (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.; Avco Corp., Avco Systems Div., Wilmington, Mass.). *Space Life Sciences*, vol. 3, June 1972, p. 198-205. 5 refs.

Saturethane solid propellant was used in all tests. The spore inoculum was evenly distributed in the propellant. Samples weighing approximately 5 g were aseptically removed, placed into curing ovens, and exposed to cure temperatures. Initial tests were conducted at 82 and 93 C. Analysis of the obtained data indicated that the survivor curves were not linear. Exposure of the inoculated propellant samples to 93 C reduced the initial population to less than 0.01% in about 20 hours. At 82 C, approximately 168 hours were required for a similar reduction. Tests involving curing temperatures of 105 and 115 C were also conducted. It is pointed out that changes in the mechanism of spore inactivation due to chemical and physical changes in the propellant could account for the nonlinear survivor curves obtained. G.R.

A72-36438 Predictability of PaO₂ in different inert gas-oxygen environments. C. L. Schatte, J. B. Simmons, D. P. Clarkson, and J. P. Jordan (Colorado State University, Fort Collins, Colo.). *Space Life Sciences*, vol. 3, June 1972, p. 206-209. 6 refs.

Evaluation of the blood oxygenating ability of helium and argon environments relative to atmospheric air. Using the alveolar gas equation, the inspired oxygen pressure necessary to produce an arterial oxygen pressure (PaO₂) similar to that occurring in atmospheric air was computed for various test environments. Despite the variation in viscosity and density of the mixtures, it is concluded that the mechanical aspects of breathing them are not likely significantly to influence ventilation (and, presumably, arterial oxygenation) at normal to moderately hyperventilatory respiration rates. M.V.E.

A72-36439 * Neuropathological evaluation of monkeys exposed to body-alone X-radiation. W. Haymaker (NASA, Ames Research Center, Moffett Field, Calif.), D. Sturrock, J. H. Kirk, H. W. Casey (USAF, School of Aerospace Medicine, Brooks AFB, Tex.), and N. A. Call (Mercy Institute of Biomedical Research, Denver, Colo.). *Space Life Sciences*, vol. 3, June 1972, p. 210-225. 7 refs.

Investigation of the problem of whether morphological changes occurring in the central nervous system (CNS) following whole-body irradiation are attributable in part to abscopal factors. The 12 monkeys irradiated and the 6 that served as controls were chosen from a pool of 25 young monkeys. Over the postirradiation survival period of 14 days the hematocrit and hemoglobin values varied only slightly from the baseline values and from the values in the 6 control animals. White cell fractions were reduced in quantity but tended to recover relatively soon after irradiation. The design of this experiment was regarded as adequate to allow a conclusion whether pathological changes in the CNS of the irradiated animals differed from or exceeded those observed in the control animals. That such occurred on both counts in 3 of the 12 irradiated animals was evident. It appears that all the lesions must have been abscopally induced. F.R.L.

A72-36440 Of pigs and men and research - A review of applications and analogies of the pig, *sus scrofa*, in human medical research. W. R. Douglas (Rigshospitalet, Copenhagen, Denmark). *Space Life Sciences*, vol. 3, June 1972, p. 226-234. 54 refs.

A review of the role of pigs as an ideal experimental animal in human medical research is given, covering applications and analogies of *sus scrofa* in general medicine encompassing space medicine. It is also a report of some investigations carried out on Danish Landrace pigs that emphasize the similarities of swine and men. The musculoskeletal system, respiration, circulation, blood, lymph, digestion, metabolism, nutrition, excretion, endocrines, dermatological problems, and eyes are discussed along with other aspects to show the value of the pig when a large, human-like biomedical research animal is needed. (Author)

A72-36441 An hypothesis concerning the mechanism of the sodium-potassium pump /Brief note/. R. A. Horne (J. B. F. Scientific Corp., Burlington, Mass.). *Space Life Sciences*, vol. 3, June 1972, p. 235-238. 9 refs.

Advancement of the hypothesis that a mechanism repeated in a multistep process could easily give rise to the observed enrichment K(+) relative to Na(+) in the internal liquid of living cells. The hypothesis is based on the fact that the K(+) is enriched relative to Na(+) in the marine aerosol compared to the aerosol's sea water source by natural fractionation processes occurring at the air/sea interfacial boundary. If the process proves to have any validity, it will then afford still another compelling example of the unique fitness of the aqueous environment for the support of biosystems. F.R.L.

A72-36442 * A stochastic bioburden model for spacecraft sterilization. A. L. Roark (Sandia Laboratories, Albuquerque, N. Mex.). *Space Life Sciences*, vol. 3, June 1972, p. 239-253. 26 refs. NASA-supported research. NASA Order W-12853.

Development of a stochastic model of the probability distribution for the random variable representing the number of microorganisms on a surface as a function of time. The first basic principle associated with bioburden estimation is that viable particles are removed from surfaces. The second notion important to the analysis is that microorganisms in environments and on surfaces occur in clumps. The last basic principle relating to bioburden modeling is that viable particles are deposited on a surface. The bioburden on a spacecraft is determined by the amount and kind of control exercised on the spacecraft assembly location, the shedding characteristics of the individuals in the vicinity of the spacecraft, its orientation, the geographical location in which the assembly takes place, and the steps in the assembly procedure. The model presented has many of the features which are desirable for its use in the spacecraft sterilization programs currently being planned by NASA. F.R.L.

A72-36443 * 'Thunder' - Shock waves in pre-biological organic synthesis. A. Bar-Nun (Jerusalem, Hebrew University, Jerusalem, Israel) and M. E. Tauber (NASA, Ames Research Center, Moffett Field, Calif.). *Space Life Sciences*, vol. 3, June 1972, p. 254-259. 13 refs.

Theoretical study of the gasdynamics and chemistry of lightning-produced shock waves in a postulated primordial reducing atmosphere. It is shown that the conditions are similar to those encountered in a previously performed shock-tube experiment which resulted in 36% of the ammonia in the original mixture being converted into amino acids. The calculations give the (very large) energy rate of about 0.4 cal/sq cm/yr available for amino acid production, supporting previous hypotheses that 'thunder' could have been responsible for efficient large-scale production of organic molecules serving as precursors of life. (Author)

A72-36444 * A note on the biological activity of the noble gas compound xenon trioxide. S. M. Siegel and C. W. Smith (Hawaii, University, Honolulu, Hawaii). *Space Life Sciences*, vol. 3, June 1972, p. 260-264. 5 refs. Grant No. NGL-12-001-042.

Comparison of xenon trioxide for toxicity in the few common oxidants using three bioassays. On a molar basis XeO₃ and HOCl were similar, but XeO₃ was less active than expected when comparisons were based on normality. (Author)

A72-36445 Functional development of the altitude convulsion mechanism in mice and rabbits /Research note/. C. F. Chen and H. S. Fang (National Taiwan University, Taipei, Nationalist China). *Space Life Sciences*, vol. 3, June 1972, p. 265-267. 6 refs.

A72-36446 Effects of vagotomy and increased blood pressure on the incidence of decompression-induced pulmonary hemorrhage. H. S. Fang (National Taiwan University, Taipei, Nationalist China) and C. M. Tang (CAF General Hospital, Taipei, Nationalist China). *Space Life Sciences*, vol. 3, June 1972, p. 268-270.

A72-36447 # Body weight decreases in some proton exposed primates. J. H. Kirk (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Space Life Sciences*, vol. 3, June 1972, p. 271-277. 10 refs.

Immature *Macaca mulatta* were exposed to varying doses of whole body irradiations utilizing 2 MeV X-rays; 55, 138 and 400 MeV protons; and 2.3 GeV protons. Over 200 primates remain in a life-long study of space type irradiation effects. Mean body weight decreases as a function of age, sex, dose and irradiation type have been found in the 55 MeV proton exposed group but not in the other groups. The cause of the decreased weights is unknown at present, as is the reason for the lack of this effect in the more penetrating irradiations. (Author)

A72-36448 Evidence for activated interfacial charge transport in low-G acceleration stress. F. W. Cope (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). *Space Life Sciences*, vol. 3, June 1972, p. 278-281. 20 refs.

Demonstration that the distribution of survival times of rats subjected to acceleration stress of +20 Gz conforms to the Roginsky-Zeldovich or Elovich equation. This equation is derived from the hypothesis of electron or ion conduction across an activation energy barrier at the surface of a cell or subcellular particle, which suggests that tolerance to this acceleration stress is dependent upon such a biophysical process. (Author)

A72-36449 Neuroinhibition in the regulation of emesis. J. Zabara, R. B. Chaffee, Jr., and M. F. Tansy (Temple University, Philadelphia, Pa.). *Space Life Sciences*, vol. 3, June 1972, p. 282-292. 31 refs. Grant No. PHS-FR-05339-07.

Elucidation of an inhibitory system in the regulation of emesis is presented in this report. Emesis preceded by retching can be induced in the dog by appropriate electrical stimulation of abdominal vagus nerves at the supradiaphragmatic level. Failure to produce retching or emesis by electrical stimulation of the cervical vagus trunk suggests either that the abdominal vagal emetic afferent does not course in the cervical vagus or that fibers inhibitory to emesis are present. This report presents evidence for afferent fibers inhibitory to retching and emesis in the cervical vagus. Retching and emesis resulting from stimulation of the supradiaphragmatic vagus can be prevented by either transection of the cervical vagus or simultaneous stimulation of the cervical vagus trunk. In addition, retching and emesis occur with stimulation of a fine nerve bundle dissected from the cervical vagus trunk. (Author)

A72-36450 * Chemical evolution and the origin of life - Bibliography supplement 1970. M. W. West, E. D. Gill (San Jose State College, San Jose, Calif.), and C. Ponnampertuma (NASA, Ames Research Center, Exobiology Div., Moffett Field, Calif.). *Space Life Sciences*, vol. 3, June 1972, p. 293-304. 213 refs.

A72-36522 Observations on microwave hazards to USAF personnel. L. T. Odland (USAF, Radiological Health Laboratory, Wright-Patterson AFB, Ohio). *Journal of Occupational Medicine*, vol. 14, July 1972, p. 544-547. 17 refs.

Consideration of microwave injury experiences and possible potential hazards of microwave exposures to microwave operators in an attempt to assess the validity of present USAF exposure safety limits. Particular attention is given to the incidence of cataract in members of USAF personnel exposed to microwave radiation. It is pointed out that the present 10 mw/sq cm exposure limit may be subject to a future revision when warranted by new evidence. It is also indicated that the eye is not the most vulnerable organ and that the use of cataract development as a criterion of microwave damage is conditional. V.Z.

A72-36536 Continuous flow general aviation oxygen masks. SAE Aerospace Standard, AS 1224, Sept. 15, 1971. 7 p.

A72-36559 # Thermoregulation during positive and negative work at different environmental temperatures. B. Nielsen, S. L. Nielsen, and F. B. Petersen (Copenhagen, University, Copenhagen, Denmark). *Acta Physiologica Scandinavica*, vol. 85, June 1972, p. 249-257. 25 refs. Research supported by the Danish Medical Research Council.

Study of cardiac output, and thermoregulatory reactions at 20, 30 and 35 C during positive work (pos I) and negative work (neg) at O₂ uptakes of 0.8 liter/min, and also during positive work (pos II) at an O₂ uptake of 1.7 liter/min - i.e., with a total heat production equal to that during the negative work. At equal O₂ uptakes the cardiac output was the same in pos I and neg. The blood flow in the working muscles, estimated with a Xe133 method, was not measurably different in pos I and neg. The upper limit for thermal equilibrium was reached at lower environmental temperature in negative work. This is most probably explained by the higher skin circulation during negative work. Since the total cardiac output and muscle blood flow are the same in pos I and neg, the blood reserve available for heat transport during external heat stress - e.g., in splanchnic organs - is presumably reduced in negative work. (Author)

A72-36560 # Fluid transfer between blood and tissues during exercise. J. Lundvall, S. Mellander, H. Westling, and T. White (Lund, Universitet, Lund, Sweden). *Acta Physiologica Scandinavica*, vol. 85, June 1972, p. 258-269. 21 refs. Swedish Medical Research Council Grants No. K71-14X-2210-05CK; No. B72-14X-2210-06A; No. B71-14X-2872-03C.

During 6 min exercise on a bicycle ergometer the volume of the leg in normal males increased so as to indicate, after correction for increased regional blood volume, an average transcapillary fluid loss into the leg muscles of 19, 31, and 45 ml/kg tissue at light (300 kpm/min), moderate (900 kpm/min), and heavy (1200-1500 kpm/min) work load. The total fluid loss into the active muscle mass was calculated to comprise about 1100 ml during heavy work. Since the concomitant decrease of plasma volume was 600 ml, it follows that some 500 ml of fluid must have entered the circulatory system during the work. The study indicated that this compensatory fluid gain was accomplished by absorption of extravascular fluid from inactive tissues and partly caused by osmosis resulting from work induced arterial hyperosmolality (average increase 22 mOsm/kg H₂O). Fluid absorption from inactive tissues was studied in experimental animals during exercise and in resting humans during arterial hyperosmolality produced by intravenous hypertonic infusions. The investigations suggested that at least half of the fluid gain to the circulatory system in heavy exercise could be ascribed to the increased arterial osmolality and the remainder to a reflex decrease of capillary pressure. (Author)

A72-36569 Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects. J. A. Jacquez, E. Daniels (Michigan, University, Ann Arbor, Mich.), and H. Kutchai (Johns Hopkins University, Baltimore, Md.). *Respiration Physiology*, vol. 15, June 1972, p. 166-181. 15 refs.

A72-36570 Pulmonary gas exchange in Andean natives at high altitude. J. C. Mithoefer, G. Zubieta, M. C. Mithoefer (Dartmouth Medical School, Hanover, N.H.; Instituto Boliviano de Biología de Altura, La Paz, Bolivia), and J. E. Remmers. *Respiration Physiology*, vol. 15, June 1972, p. 182-189. 11 refs. Research supported by the United Health Foundations; Grants No. NIH-HE-02888-11; No. NIH-HE-09130-03; No. NIH-HE-05869-02.

A72-36571 A model of fluctuating alveolar gas exchange during the respiratory cycle. M. P. Hlastala (Washington, University, Seattle, Wash.). *Respiration Physiology*, vol. 15, June 1972, p. 214-232. 19 refs. Grants No. PHS-HE-12174; No. PHS-HE-05819.

A72-36572 **Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed.** H. Kazemi, E. F. Parsons (Massachusetts General Hospital; Harvard University, Boston, Mass.), and P. E. Bruecke. *Respiration Physiology*, vol. 15, June 1972, p. 245-254. 31 refs. Grants No. NIH-HE-0666-4; No. NIH-HE-05767.

A72-36573 **In vivo incorporation of C-14/1/palmitate and H-3/U/glucose into lung lecithin.** L. Gassenheimer, R. A. Rhoades, and R. W. Scholz (Pennsylvania State University, University Park, Pa.). *Respiration Physiology*, vol. 15, June 1972, p. 268-275. 34 refs. Grant No. NIH-ES-00335.

Study of pulmonary lipid metabolism through measurements of the biological half-life of mixed lung lecithins and their hydrolytic products under feeding and fasting in rats intravenously injected with a doubly labeled isotropic solution of C-14/1/palmitate and H-3/U/glucose. The fasting condition was chosen because lipid metabolism in liver and adipose tissue is markedly affected by fasting. It was found that fasting did not significantly affect the half-life of whole-lung lecithins. M.V.E.

A72-36605 **Intraocular noise - Origin and characteristics.** A. Troelstra (Rice University, Houston, Tex.). *Vision Research*, vol. 12, Aug. 1972, p. 1313-1326. 15 refs.

A72-36606 **An analytical description of the line element in the zone-fluctuation model of colour vision. I, II.** J. J. Vos and P. L. Walraven (Institute for Perception RVO-TNO, Soesterberg, Netherlands). *Vision Research*, vol. 12, Aug. 1972, p. 1327-1365. 48 refs.

A72-36607 **Effect of selective adaptation on detection of simple and compound parafoveal stimuli.** L. G. Kerr and J. P. Thomas (California, University, Los Angeles, Calif.). *Vision Research*, vol. 12, Aug. 1972, p. 1367-1379. 19 refs. Grant No. PHS-EY-00360.

A72-36608 **On the apparent orbit of the Pulfrich pendulum.** W. R. Levick, B. G. Cleland, and J. S. Coombs (Australian National University, Canberra, Australia). *Vision Research*, vol. 12, Aug. 1972, p. 1381-1388. 21 refs.

A72-36609 **Fly colour vision.** A. W. Snyder (Australian National University, Canberra, Australia) and W. H. Miller (Yale University, New Haven, Conn.). *Vision Research*, vol. 12, Aug. 1972, p. 1389-1396. 17 refs.

A72-36610 **Optokinetic thresholds in the normal monkey.** J. A. Valciukas (New York, City University, New York, N.Y.). *Vision Research*, vol. 12, Aug. 1972, p. 1397-1407. 19 refs. Research supported by the City University of New York; Grant No. NIH-MH-02261.

A72-36611 **Visual brightness - Some applications of a model.** L. E. Marks (John B. Pierce Foundation Laboratory; Yale University, New Haven, Conn.). *Vision Research*, vol. 12, Aug. 1972, p. 1409-1423. 46 refs. Grant No. AF-AFOSR-70-1950.

Application of a model, the essence of which is the postulation of a cascade of filter-like stages; the relation between the output from the filter system and the input to it is seen to parallel the brightness response of the visual system to light. The critical assumption of the model is that the output of each filter stage is modulated by shunting feedback. Psychophysical functions for brightness, parametric effects on brightness (retinal locus of stimulation), temporal and spatial summation, and some anatomical and physiological speculations are considered. F.R.L.

A72-36612 **Vergence eye movements to pairs of disparity stimuli with shape selection cues.** R. Jones and K. E. Kerr (Ohio State University, Columbus, Ohio). *Vision Research*, vol. 12, Aug. 1972, p. 1425-1430. 14 refs. Research supported by the Ohio State University Development Fund and Ohio Lions Foundation.

A72-36613 **Hue shifts accompany phase induced modulation enhancement of sinusoidally flickering lights.** G. K. Bijl and F. T. Veringa (Groningen, State University, Groningen, Netherlands). *Vision Research*, vol. 12, Aug. 1972, p. 1431-1434. 7 refs. Research supported by the Nederlandse Organisatie voor Zuiverwetenschappelijk Onderzoek.

A72-36624 **Circadian variation of RNA in human leucocytes.** W. C. Kohler, I. Karacan, and O. M. Rennert (Florida, University, Gainesville, Fla.). *Nature*, vol. 238, July 14, 1972, p. 94-96. 8 refs. Research supported by the U.S. Veterans Administration and NIH.

Changes in total (quantitative) RNA content, as well as changes in RNA type (qualitative) in human leucocytes are reported. These changes follow a rhythm of approximately 24 hours. Advances in electroencephalographic studies were utilized for extending the diurnal evaluation to include samples during normal sleep. Five healthy young adults were studied. A definite circadian rhythm in total RNA was found to be present in all five subjects. G.R.

A72-36799 # **Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man (Recherches de l'influence de la théophylline sur l'action vasodilatatrice de différents médicaments sur la circulation cérébrale et coronaire de l'homme).** H. H. Hilger, M. Grenzmann, J. Wagner, D. W. Behrenbeck, and H. Hellwig (Bonn, Universität, Bonn, West Germany). *Acta Cardiologica*, vol. 27, no. 3, 1972, p. 383-391. 16 refs. In French.

A72-36829 **Development and results of freeze-etching techniques (Entwicklung und Ergebnisse der Gefrierätz-Technik).** H. Moor (Eidgenössische Technische Hochschule, Zurich, Switzerland). In: Results of high-vacuum technology and the physics of thin films. Volume 2. Stuttgart, Wissenschaftliche Verlagsgesellschaft mbH, 1971, p. 33-58. 29 refs. In German.

Presently used techniques for the study of biological structures with the electron microscope have the disadvantage that chemical transformations occur in the objects of study during the preparation with a casting resin. A new method which does not require the use of a plastic material had been first proposed by Hall (1950). The method was first employed for the study of biological specimens by Steere (1957). The method was technically improved by Moor et al. (1971). It is pointed out that an instrument is now commercially available as an aid for the widespread use of the new method. The design of the instrument is discussed together with some results obtained with it, the freezing living cells, the breaking up of frozen objects, and approaches for obtaining the desired structural image under the electron microscope. G.R.

A72-36902 Recent research applicable to the design of electronic displays. M. Munn (U.S. Navy, Crew Systems Dept., Warminster, Pa.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 683-689. 16 refs.

Summary of recent research pertaining to some of the variables involved in various electronic displays such as radar scopes, fire control indicators, clear-plot tactical displays, etc., in the hope that the information will prove useful in the further development of operational electronic systems. Symbols, the number of display variables, the area of display persistency, display update rate, search and detection time, and operator alertness are discussed. F.R.L.

A72-36903 Extraversion, neuroticism, and color preferences. A. Choungourian (Pennsylvania State University, University Park, Pa.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 724-726. 8 refs.

Extraverts (N = 80), neurotics (N = 80), and an undifferentiated group (N = 160), with equal numbers of males and females in each group coming from 4 diverse national backgrounds, expressed their preferences for eight Ostwald hues (red, orange, yellow, yellow-green, green, blue-green, blue, and purple) through the method of paired comparisons. The results indicate that there are no significant differences between the color preferences of an undifferentiated group and either extraverts or neurotics; however, neurotics prefer significantly more red and purple than extraverts, while extraverts prefer significantly more yellow-green than neurotics. (Author)

A72-36904 Autokinesis and attention distribution. S. Starker (Montefiore Hospital, Bronx, N.Y.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 743-749. 25 refs.

An attempt is made to test experimentally the Voth and Mayman hypothesis that autokinesis is mediated by an attention-distribution mechanism. Experimental manipulations of attention distribution failed to yield significant effects upon autokinetic perception. The tentativeness of the Voth and Mayman model of autokinesis is emphasized. (Author)

A72-36905 Personality correlates of lateral eye movement and handedness. C. F. Etaugh (Bradley University, Peoria, Ill.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 751-754. 11 refs. Research supported by Bradley University.

A72-36906 Developmental relationships between field independence and fixity-mobility. D. A. Eisner (William Paterson College, N.J.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 767-770. 11 refs.

The level of field independence (measured by the embedded-figures test) was intercorrelated for 20 males with the level of fixity-mobility (measured by the Stroop color-word test) at five different age levels. The Pearson correlations suggested that with an increase in the level of field independence there is a tendency to be mobile, and with a decrease in the level of field dependence there is a tendency to be fixed. (Author)

A72-36907 Experimenter-expectancy phenomenon - Experience of E, mechanical vs manual stimulus presentation and IQ vs success-failure judgments. H. McGinley, P. McGinley (Wyoming University, Laramie, Wyo.), and R. Murray (Manitoba, University, Winnipeg, Manitoba, Canada). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 771-781. 30 refs. National Research Council Grant No. 7458.

Fifty experimenters obtained person perception data from 576 subjects. In Phase I, two experienced experimenters obtained IQ and

success-failure (SF) judgments from 50 male and 50 female subjects about 10 women whose pictures they viewed. In Phase II, 48 inexperienced experimenters obtained IQ and SF judgments from 476 female subjects. The independent variables in Phase II were 0 + 5 expectancy, mechanical or manual presentation of picture stimuli, IQ or SF judgments, and order of expectancy inducement. Results showed only a judgment effect, higher ratings for SF than IQ. Questionnaire data showed that subjects whose data were collected by experienced experimenters felt that SF judgments were easier to make than did subjects whose data were collected by inexperienced experimenters. (Author)

A72-36908 Visual half-field differences in the recognition of bilaterally presented single letters and vertically spelled words. W. F. McKeever and K. M. Gill (Bowling Green State University, Bowling Green, Ohio). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 815-818. 11 refs.

Tachistoscopic recognition of bilaterally presented single letters and vertically spelled words as a function of the lateral visual-half-field placement of the stimuli was examined. Right visual-field recognition superiority obtained for both types of stimuli, but the percentage of subjects showing right-field superiority was much lower than obtained in earlier experiments using horizontally spelled words as stimuli. It is suggested that reading habits are not fundamental to the results and that all the data can be encompassed within a lateral dominance and visual masking-temporal registration sequence model in which the temporal patterning of inputs from differing retinal locations plays a major role in producing left-right differences for horizontally displayed words. (Author)

A72-36909 Novelty, recency and frequency effects on visual recognition and pseudo-recognition thresholds. S. W. Pyke (York University, Toronto, Canada). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 847-856. 20 refs. National Research Council Grant No. APT-60.

A72-36910 Life-span age differences in visual perception. D. A. Eisner (William Paterson College, N.J.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 857, 858. 9 refs.

Results of administration of a large number of perceptual tasks to subjects of widely different ages to assess whether some tasks are more age-related than others. The design was cross-sectional, i.e., age differences may reflect both maturational differences along with generational differences (Schaie, 1970). Analyses of variance indicated significant age differences on 13 of the 16 variables. F.R.L.

A72-36911 Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. M. J. Gerben, J. L. House, and F. R. Winsmann (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 875-881. 5 refs.

A72-36912 Non-monotonicity of temporal recognition of brief duration. S. S. Mo and V. A. Michalski (Detroit, University, Detroit, Mich.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 887-890. 7 refs.

Bow-shaped curves were obtained for correct judgments of five brief durations, regardless of whether judgment was of durations themselves or of the apparent brightness of the stimulus. The mechanism of subjective time was shown not to retain the directionality inherent in objective time. (Author)

A72-36913 Division and orientation in the vertical-horizontal illusion. J. A. Becker (Thomas More College, Fort Mitchell, Ky.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 899-902. 11 refs.

This study attempted to determine the influence of the division (bisection of the horizontal line by the vertical line) and orientation (vertical line seems longer than horizontal line) factors on the vertical-horizontal illusion. 100 subjects were divided into two groups, one with knowledge of the division and orientation factors and the other group without knowledge of these factors. The results indicated that the amount of error for the group with knowledge was significantly smaller than for the group without knowledge. (Author)

A72-36914 Effect of reference points and masking on tachistoscopic pattern perception. P. M. Monti (College of William and Mary, Williamsburg, Va.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 923-940. 21 refs. Grant No. NIH-HD-00207-11.

Four experiments examined subjects' tendency to reproduce more accurately elements about reference points, i.e., fixation (fixation facilitation) and extreme positions (end-segregation) of binary patterns. Experiment I varied pattern length from 4 to 28 elements. As predicted, end-segregation was greatest for intermediate lengths, and absent for longer patterns. Unexpected results were an end-segregation effect for shortest patterns and no fixation facilitation. In experiment II, pairs of elements at all eccentric positions were more accurately reproduced when presented alone. Experiment III found no fixation facilitation with 28-element patterns and fixation-reference markers on the responding templates. Experiment IV tested the hypothesis that the fixation marker had masked central elements in experiments I and III. These experiments show that mnemonic factors affect differential perceptual accuracy among elements in tachistoscopic patterns. (Author)

A72-36915 Concurrent task practice conditions and transfer. R. S. Rivenes and C. S. Caplan (California State College, Hayward, Calif.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 941, 942. 6 refs.

Sixty girls practiced rotary pursuit with 10-sec work, 15-sec rest. Twenty transferred to 60 rpm after 20 trials at 45 rpm, 20 transferred from 45 to 60 rpm, and 20 alternated trials. Total time on target was higher for 45 rpm than for 60 rpm and transfer was greater from the slower to the faster speed, but over-all group performance was equivalent. (Author)

A72-36916 Verbal reports of pain without noxious stimulation. K. D. Craig (British Columbia, University, Vancouver, Canada) and S. M. Weiss (Johns Hopkins University, Baltimore, Md.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 943-948. 10 refs. National Research Council of Canada Grant No. APA-136.

It was hypothesized that allowing subjects to observe a confederate model reporting a constant, nonaversive electric shock as progressively more noxious would elicit reports of pain to this same shock from subjects themselves. Two groups of 10 subjects received nonincremental shocks, with one group observing a model rate the shocks as progressively more painful. Subjects concurrently rated shock intensity on a scale varying from undetectable to painful. Subjects paired with a progressively less tolerant model matched this behavior. The findings were discussed in the context of vicarious learning theory and social influences on expressions of pain. (Author)

A72-36917 Repression-sensitization and duration of visual attention. D. Carroll (Australian National University, Canberra, Australia). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 949, 950. 6 refs.

This study attempted to gauge the relationship between score on the repression-sensitization (R-S) scale and the duration of visual attention exhibited to affective (pleasant and unpleasant) and affectively neutral visual stimuli. Position on the R-S dimension differentially influenced the looking times exhibited to the unpleasant and pleasant stimuli by 24 subjects. (Author)

A72-36918 Effects of visual cues on the standing body sway of males and females. S. Weissman (Lafayette College, Easton, Pa.) and E. Dzendolet (Massachusetts, University, Amherst, Mass.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 951-959. 11 refs.

Six male and six female subjects, in a standing position, were exposed for 4 min to the following conditions: eyes closed, vertical luminous rod, horizontal luminous rod, diagonal right luminous rod, eyes closed - body lean left, and eyes open with view of experimental room. Each student was tested in a single session, with the six conditions presented according to their position in a Latin square design. Power spectral density analysis of body sway showed little influence of the visual system in the maintenance of static equilibrium. Possible effects of the visual system in more active or stressful body conditions were discussed. (Author)

A72-36919 Experienced attraction between two parallel bars. K. Holt-Hansen (Copenhagen, University, Copenhagen, Denmark). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 971-974.

The present paper describes judged attraction (forces) between objects, which, in my experiments, are parallel bars, approximately 17 cm long and 8 mm wide, placed in the middle of a black surface measuring 50 by 50 cm. The maximum attraction between the bars was most frequently judged to occur when the distance between the bars was approximately 4 cm. When the distance between the bars grew smaller than 4 cm judged attraction continued for a large majority of subjects until the bars lay close together. The range of judged attraction ended for most at 20 cm but not for all. (Author)

A72-36920 Manipulation of projected afterimages by means of the physiological theory imposed on the observer. G. J. W. Smith and L. Sjöholm (Lund Universitet, Lund, Sweden). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 975-981. 6 refs. Research supported by the Swedish Council for Social Science Research.

Three previous experiments have shown that subjects presented with a theory of visual afterimages (AIs) emphasizing their outside origin produce more immature images than subjects presented with the opposite, subject-centered type of theory. In the present experiment with 29 20-yr-old students, one subgroup (retinal) was told that the AI is an exclusively retinal affair, the other subgroup (CNS) that it is shaped by the same parts of CNS as control central mental functions. The results indicated that possibilities of individual expression via the AI were constricted by the retinal theory and broadened by the CNS theory. (Author)

A72-36921 Apparatus for programmed oral administration of drugs to large primates in altered environments. L. Wynne and A. G. Koestler (USAF, Aeromedical Research Laboratory, Holloman AFB, N. Mex.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 991-999. 5 refs. Research supported by the U.S. Food and Drug Administration and U.S. Air Force.

This apparatus was designed to administer chronic and high-level doses of clinical drugs (e.g., hydrochlorothiazide, allopurinol, clofibrate) to primates by suspending the drugs in a liquid reinforcer in order to assess their effects on operant baselines. Since nausea, drowsiness, and other common side effects might well be more

Pronounced in experimental vibration and altered gravity - conditions of interest to flying personnel - the apparatus was designed to be able to withstand such conditions without degradation of the reinforcement delivery mechanism. (Author)

A72-36922 * Effect of set size, age, and mode of stimulus presentation on information-processing speed. J. C. Norton (Arizona, University, Tucson, Ariz.). *Perceptual and Motor Skills*, vol. 34, June 1972, p. 1003-1010. 19 refs. NSF Grant No. GB-3955; Grant No. NGR-03-002-068.

First, second, and third grade pupils served as subjects in an experiment designed to show the effect of age, mode of stimulus presentation, and information value on recognition time. Stimuli were presented in picture and printed word form and in groups of 2, 4, and 8. The results of the study indicate that first graders are slower than second and third graders who are nearly equal. There is a gross shift in reaction time as a function of mode of stimulus presentation with increase in age. The first graders take much longer to identify words than pictures, while the reverse is true of the older groups. With regard to set size, a slope appears in the pictures condition in the older groups, while for first graders, a large slope occurs in the words condition and only a much smaller one for pictures. (Author)

A72-36977 Restitution of function in the CNS - The pathologic grasp in *Macaca mulatta*. M. E. Goldberger (Chicago, University, Chicago, Ill.). *Experimental Brain Research*, vol. 15, no. 1, 1972, p. 79-96. 41 refs. NSF Grants No. GB-27614; No. GB-7902.

Investigation of the behavioral changes which constitute recovery of motor function, and evaluation of the contribution of different parts of the nervous system to recovery from forced grasping in particular, by observations on both reflex and conditional movements. Cortical lesions made it impossible for the animals to relinquish a stick or to avoid grasping an unconditioned (tactile) stimulus. The possible mechanisms underlying restitution are discussed; it is suggested that the abnormal grasp is compensated by enhancement of its opposing reflex, tactile evasion, which is subserved by the pyramid. During 'recovery', pyramidal function vis-a-vis tactile evasion was enhanced in response to loss of inhibitory control over tactile and proprioceptive grasp reflex activity. This model is offered as an alternative to 'functional reorganization' and 'vicarious function'. F.R.L.

A72-36999 Servo action in human voluntary movement. C. D. Marsden (National Hospital; Institute of Psychiatry, London, England), P. A. Merton (National Hospital, London; Physiological Laboratory, Cambridge, England), and H. B. Morton (National Hospital, London, England). *Nature*, vol. 238, July 21, 1972, p. 140-143. 19 refs. Research supported by the Department of Trade and Industry.

It is pointed out that so far the evidence for the servo theory of muscle control from animal experiments has been equivocal. Direct evidence regarding the servo theory was obtained by conducting experiments involving an unexpected interference with flexion movements of the top joint of the human thumb. This movement was chosen because it involves only one muscle, the flexor pollicis longus, which lies in the forearm. It was found that there is servo action, sensitive, brisk, and so early as clearly to be automatic, in voluntary movements of the thumb. G.R.

A72-37013 Considerations in the design of an automatic visual field tester. J. A. Gans (Mount Sinai Hospital, Cleveland, Ohio). *Medical Research Engineering*, vol. 10, Dec. 1971, p. 7-11. 6 refs.

Discussion of an automatic visual field tester design which does not require any human assistance for control and operation. Physical, electronic and ophthalmological aspects of this design are considered. A block diagram of a prototype tester is included. The key features of the tester are a stepper, a timer and a power supply system. V.Z.

A72-37026 * Experimental investigation of an astronaut maneuvering scheme. T. R. Kane, M. R. Headrick, and J. D. Yatteau (Stanford University, Stanford, Calif.). *Journal of Biomechanics*, vol. 5, July 1972, p. 313-320. Grant No. NGR-05-020-209.

A new concept for astronaut maneuvering in space is proposed, and an experimental study undertaken to test this concept is described. The series of experiments performed appear to promise advantages over previously proposed schemes in terms of propellant economy, system weight, reliability, and safety. The simulation tests established the feasibility of the proposed maneuvering concept by showing that test subjects were able to place their bodies sufficiently near the reference position to avoid excessive angular momentum build-up; no difficulties were encountered in selecting self-rotation maneuvers suitable for effecting desired changes in orientation; and the execution of these maneuvers produced predicted reorientations without tiring the test subject significantly. M.V.E.

A72-37027 Dynamics of dissolution of gas bubbles or pockets in tissues. W.-J. Yang and C. Y. Liang (Michigan, University, Ann Arbor, Mich.). *Journal of Biomechanics*, vol. 5, July 1972, p. 321-332. 30 refs.

A mathematical model is developed which describes the dynamic characteristics of gas bubbles in subcutaneous tissues. Consideration is given to both inert and reacting gases. The effects of blood perfusion (or oxygen consumption in the tissue in dead animals), diffusion of the dissolved gases, a creep process occurring in the tissue, and thermodynamic behavior of the gases in the cavity on the dissolution of the gas bubbles are taken into account. The stress-strain relation of the tissues in creep is described by the standard linear model of viscoelasticity. The theoretical analysis is presented in three categories. (1) tissue creep controlled, (2) mass transfer controlled, and (3) the intermediate case where both mechanisms are of comparable importance. A close agreement is obtained between the theoretical predictions and the existing experimental data for subcutaneous inert gas pockets in air breathing rats. (Author)

A72-37028 Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. B. W. Schaaf and P. H. Abbrecht (Michigan, University, Ann Arbor, Mich.). *Journal of Biomechanics*, vol. 5, July 1972, p. 345-364. 25 refs. NSF Grant No. GB-5874; Grants No. PHS-AM-10395; No. PHS-GM-01289.

A72-37029 A human left ventricular control system model for cardiac diagnosis. D. N. Ghista, K. M. Patil (Indian Institute of Technology, Madras, India), K. B. Woo (National Cancer Institute, Bethesda, Md.), and C. Oliver (Washington University, St. Louis, Mo.). *Journal of Biomechanics*, vol. 5, July 1972, p. 365-390. 17 refs.

A control system model is presented that describes the functional mechanics of the controlled human left ventricle in interaction with the circulatory system and regulated by the central nervous system. The variables of the model are: those associated with the left ventricle, namely chamber pressure and volume, heart rate, contractility; and (2) those associated with the circulatory system, namely arterial pressure and peripheral resistance. Clinical application of the model is carried out for three subjects. For each subject, the diagnostic parameters of the simulated model are obtained, and the inferred physiological health states of the subjects are discussed. M.V.E.

A72-37030 Plasma proteins, oxygen transport and atherosclerosis. G. M. Chisolm, J. L. Gainer, G. E. Stoner (Virginia, University, Charlottesville, Va.), and J. V. Gainer, Jr. (West Virginia University, Morgantown, W. Va.). *Atherosclerosis*, vol. 15, May-June 1972, p. 327-343. 31 refs.

Evidence is given in support of the hypoxic theory for the formation of atherosclerosis. It is shown that oxygen transport is affected by plasma protein concentrations and in most humans probably decreases with age. The result of hypoxia at the aortic lining is a degeneration of surface features which results in increased cellular permeability. The interior structure of the vessel is further disorganized due to the influx of lipids and other plasmatic matter. This in turn accelerates oxygen demand and augments hypoxia. These ideas concerning the effects of proteins on oxygen transport, as well as the importance of the diffusion resistance of blood plasma, provide strong indications of a comprehensive mechanism for the occurrence of atherosclerosis and other vascular changes associated with aging. (Author)

A72-37031 Changes of the mitral echocardiogram with ageing and the influence of atherosclerotic risk factors. U. Derman (Istanbul, University, Istanbul, Turkey). *Atherosclerosis*, vol. 15, May-June 1972, p. 349-357. 21 refs.

A72-37193 The influence of molecular binding on the stopping power of alpha particles in hydrocarbons. J. Williamson (Steetley, Ltd., Hartlepool, Durham, England) and D. E. Watt (Dundee, University, Dundee, Scotland). *Physics in Medicine and Biology*, vol. 17, July 1972, p. 486-492. 11 refs.

A72-37194 Needle type solid state detectors for in vivo measurement of tracer activity. A. Lauber (AB Atomenergi, Nyköping, Sweden) and M. Wolgast (Institute of Physiology and Medical Biophysics, Uppsala, Sweden). *Physics in Medicine and Biology*, vol. 17, July 1972, p. 525-537. 29 refs. Research supported by the Swedish Board for Technical Development.

A72-37195 Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds. M. Wolgast (Institute of Physiology and Medical Biophysics, Uppsala, Sweden) and A. Lauber (AB Atomenergi, Nyköping, Sweden). *Physics in Medicine and Biology*, vol. 17, July 1972, p. 538-547. 14 refs.

A72-37196 Image resolution in infrared thermography. D. J. Macey and R. Oliver (Churchill Hospital, Oxford, England). *Physics in Medicine and Biology*, vol. 17, July 1972, p. 563-571.

The measurements considered were made with the Thermovision Type 652 camera. It is pointed out that the principles involved are relevant to clinical thermography in general. As a point detector is scanned across a temperature discontinuity in the field of view, there is a sudden change in the intensity of radiation received. An experimental demonstration is discussed together with theoretical considerations, and aspects of image resolution between lines. G.R.

A72-37197 The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters. E. T. Henshaw and J. T. Shaughnessy (Liverpool Regional Hospital Board, Liverpool, England). *Physics in Medicine and Biology*, vol. 17, July 1972, p. 577-583. 5 refs.

A72-37220 * The elusive tradeoff - Speed vs accuracy in visual discrimination tasks. R. G. Swenson (Bell Telephone Laboratories, Inc., Holmdel, N.J.). *Perception and Psychophysics*, vol. 12, no. 1A, July 1972, p. 16-32. 48 refs. USAF-supported research; Grant No. NGR-23-005-171.

Explicit payoffs were used to control pressures for speed and accuracy in experiments seeking tradeoffs for difficult visual discrimination tasks. The experiments involved stimuli on a cathode ray tube display controlled by a PDP-1 computer, with the subjects performing increasingly complex discrimination tasks and their earnings increasing with their performance. Models for discrimination under time pressure are proposed on the basis of the results. V.Z.

STAR ENTRIES

N72-26042* + National Aeronautics and Space Administration, Washington, D.C.

AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES, SUPPLEMENT 101, APRIL 1972

Apr. 1972 112 p refs

(NASA-SP-7011(101)) Avail: NTIS HC \$7.75 CSCL 06E

This special bibliography lists 348 reports, articles, and other documents introduced into the NASA scientific and technical information system in March 1972. Author

N72-26043* # North Carolina Univ., Chapel Hill.

DISCRIMINATION OF GRAVITATIONAL STIMULI Progress Report, 1 Feb. 1971 - 1 Mar. 1972

Fogle C. Clark 1 Mar. 1972 20 p

(Grant NGR-34-003-041)

(NASA-CR-127067) Avail: NTIS HC \$3.00 CSCL 03B

The construction and installation of an animal centrifuge and its electronic support system was completed. Experimental procedures for obtaining data on the relationship between the discriminability of g differences and location along the continuum of effective weight were initiated. Data were obtained under two successive discriminations showing discrimination among g levels. In addition, there was some indication that the discriminability of differences between g levels associated with reinforcement was the same at two locations along the g continuum, although there were differences in measures of absolute discrimination at these locations. Author

N72-26044* # General Electric Co., Philadelphia, Pa. Missile and Space Div.

FLUID DYNAMICS IN FLEXIBLE TUBES: AN APPLICATION TO THE STUDY OF THE PULMONARY CIRCULATION Annual Report

N. R. Kuchar 31 Dec. 1971 108 p refs

(Contract NASw-2138)

(NASA-CR-127111) Avail: NTIS HC \$7.50 CSCL 06P

Based on an analysis of unsteady, viscous flow through distensible tubes, a lumped-parameter model for the dynamics of blood flow through the pulmonary vascular bed was developed. The model is nonlinear, incorporating the variation of flow resistance with transmural pressure. Solved using a hybrid computer, the model yields information concerning the time-dependent behavior of blood pressures, flow rates, and volumes in each important class of vessels in each lobe of each lung in terms of the important physical and environmental parameters. Simulations of twenty abnormal or pathological situations of interest in environmental physiology and clinical medicine were performed. The model predictions agree well with physiological data. Author

N72-26045* # Advisory Group for Aerospace Research and Development, Paris (France).

SPECIAL BIOPHYSICAL PROBLEMS IN AEROSPACE MEDICINE, PART 3

A. M. Pfister, ed. Mar. 1972 126 p refs. Partly in ENGLISH and FRENCH Presented at Aerospace Med. Panel Specialist Meeting, Luchon, France, 30 Sep. - 1 Oct. 1971

(AGARD-CP-95-Pt-3) Avail: NTIS HC \$8.50

A biophysical approach to solving the problems faced by man when exposed to cosmic rays, electromagnetic waves, magnetic fields, and laser radiation is summarized.

N72-26047* # Atomic Weapons Research Establishment, Aldermaston (England). Radiation Measurements Section.

ACTIVE DOSIMETRY OF COSMIC RADIATION

E. W. Fuller In AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 11 p refs

Avail: NTIS HC \$8.50

The role assumed for active dosimetry in manned space missions and high altitude flight is to enable the exposure received during flight to be controlled by on-board monitoring. The radiation environment and the need for active dosimetry in the two circumstances are reviewed and then the instrumentation available and under development for this application is described. Methods of calibrating such instrumentation are also considered. It is concluded that satisfactory instruments for both applications are presently available but that there is a need for continuing development of more compact systems for high altitude aircraft. Author

N72-26048* # Centre de Recherches Nucleaires, Strasbourg (France). Lab. de Physique Corpusculaire.

PASSIVE DOSIMETRY OF COSMIC RADIATION [DOSIMETRIE PASSIVE DU RAYONNEMENT COSMIQUE]

R. Kaiser In AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 9 p In FRENCH

Avail: NTIS HC \$8.50

The use of passive dosimetry to study the biological effects of cosmic radiation is discussed. The problems and functions of using such equipment are also examined. Experimental dose rates were calculated and compared to measured ones. Results are given in tables. Transl. by E.H.W.

N72-26049* # Centre d'Enseignement et de Recherches de Medecine Aeronautique, Paris (France).

SOME CONSIDERATIONS ON THE DIFFICULTIES OF DOSIMETRIC EVALUATION AND COSMIC RADIATION INJURIES [QUELQUES CONSIDERATIONS SUR LES DIFFICULTES DE L'EVALUATION DOSIMETRIQUE ET LESIONNELLE DES RADIATIONS COSMIQUES]

S. Despres, C. Nogues, and G. Deltour In AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 6 p In FRENCH

Avail: NTIS HC \$8.50

The difficulties encountered in the dosimetric evaluation of cosmic rays and their effect on living matter are reported. Data cover the effects of heavy ions on skin pigments, nervous tissue, human cells in culture, biological molecules, and microorganisms. Transl. by E.H.W.

N72-26050* # Toulouse Univ. (France). Lab. de Biologie Medicale.

EVIDENCE ON THE EFFECT OF NATURAL IONIZING RADIATION ON BIOLOGICAL STIMULATION [MISE EN EVIDENCE D'UN EFFET BIOLOGIQUE DE STIMULATION DES RADIATIONS IONISANTES NATURELLES]

H. Planel, J. P. Soleilhavoup, R. Tixador, M. C. Giess, and F. Croute In AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 12 p refs In FRENCH

Avail: NTIS HC \$8.50

The effects of radioprotection and very weak irradiations on unicellular organism multiplication and embryonic development of *Drosophila melanogaster* are studied. Results show that in unicellular organisms, irradiation prolonged the cellular cycle and reduced multiplication. When the organisms were returned to a radioprotected environment, their multiplication and cellular cycles returned to normal. In the fruit fly, radiation exposure caused prolonged embryonic and larvae development.

Transl. by E.H.W.

N72-26051*# National Aeronautics and Space Administration. Manned Spacecraft Center, Houston, Tex.

VISUAL PHENOMENA INDUCED BY COSMIC RAYS AND ACCELERATED PARTICLES

Cornelius A. Tobias, Thomas F. Budinger, John T. Leith, Abdel-Megid Mamoon, and Philip Chapman *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 12 p refs Prepared in cooperation with Calif. Univ., Berkeley

(NASA-TM-X-68460) Avail: NTIS HC \$3.00 CSCL 06R

Experiments, conducted at cyclotrons together with observations by Apollo astronauts, suggest with little doubt that cosmic nuclei interacting with the visual apparatus cause the phenomenon of light flashes seen on translunar and transearth coast over the past four Apollo missions. Other experiments with high and low energy neutrons and a helium ion beam suggest that slow protons and helium ions with a stopping power greater than 10 to the 8th power eV/gram sq cm can cause the phenomenon in the dark adapted eye. It was demonstrated that charged particles induced by neutrons and helium ions can stimulate the visual apparatus. Some approaches to understanding the long term mission effects of galactic cosmic nuclei interacting with man and his nervous system are outlined.

Author

N72-26052# Centre de Recherches Nucleaires, Strasbourg (France). Lab. de Physique Corpusculaire.

FIRST RESULTS OF PASSIVE DOSIMETRIC COSMIC RADIATION EFFECTS ONBOARD A PROTOTYPE OF THE CONCORDE 001 SUPERSONIC TRANSPORT [PREMIERS RESULTATS DE LA DOSIMETRIE PASSIVE DU RAYONNEMENT COSMIQUE EFFECTURE A BORD DU PROTOTYPE DE L'AVION DE TRANSPORT SUPERSONIQUE CONCORDE 001]

R. Kaiser, A. M. Pfister, and R. P. Delahave *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 10 p refs *In* FRENCH

Avail: NTIS HC \$8.50

After a description of the characteristics of passive dosimetry carried out with the aid of equipment installed onboard a French prototype of the Concorde supersonic transport aircraft, the methods used to calculate the cosmic radiation dose rates and the results obtained are given. A preliminary interpretation of dose rates was made and compared to those obtained in an English prototype. The results from this comparison show the dose rates are in agreement.

Transl. by E.H.W.

N72-26053# Service de Sante des Armees, Toulon (France). **BIOLOGICAL EFFECTS OF UHF ELECTROMAGNETIC RADIATION [EFFETS BIOLOGIQUES DES RAYONNEMENTS ELECTROMAGNETIQUES UHF (RADARS)]**

R. Joly and B. Servantie *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 14 p refs *In* FRENCH

Avail: NTIS HC \$8.50

Very high frequency radiation effects, emitted by radar equipment, on the human organism are investigated. The physiological and physiopathological aspects are outlined. Data also cover pulse duration, penetrative power, energy density, and exposure time.

Transl. by E.H.W.

N72-26054# Bureau of Medicine and Surgery, Washington, D.C.

THE US NAVY'S PROGRAM IN NONIONIZING RADIATION

Paul E. Tyler *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 4 p refs

Avail: NTIS HC \$8.50

The extent of dependence of military forces upon electromagnetic radiation emitters for their day-to-day operations is discussed. The current concepts and safety standards of the Eastern European countries are reviewed briefly. The current Navy program in the area of nonionization radiation is presented. Three major approaches are emphasized: (1) basic research, (2) exploratory research, and (3) epidemiological surveys. The lack of adequate dosimetric instrumentation is discussed and the current program to develop instrumentation is presented.

Author

N72-26055*# Naval Aerospace Medical Research Lab., Pensacola, Fla.

MAGNETIC FIELDS AND MAN: WHERE DO WE STAND TODAY?

Dietrich E. Beischer and Vernon R. Reno *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 9 p refs Sponsored in part by NASA.

(NASA-CR-127049) Avail: NTIS HC \$3.00 CSCL 06R

An assessment is made of the effects of very low and very high magnetic fields on man. In preparation for the Apollo flights, magnetic fields of 50 gamma were generated in the laboratory by two different methods. Human volunteers were tested with a comprehensive battery of physiological and psychological tests during and after continuous exposure for various time periods. No significant difference due to the low field was found for exposure periods of up to 10 days. Technological advancements in power generation, antisubmarine warfare, and energy storage and transmission expose man to magnetic fields many orders of magnitude higher than those heretofore encountered. The only available information relevant to these conditions is based upon occasional observations in high energy physics laboratories and Soviet descriptions of clinical effects. Results on incidental human exposure and of primates exposed to high fields indicate that, while actual survival is not threatened by such exposures, high fields can influence man to a degree sufficient to cause serious performance decrement.

Author

N72-26056# Duke Univ., Durham, N.C. Dept. of Ophthalmology. **LASER SAFETY AND HOW TO PROMOTE IT**

Myron L. Wolbarsht *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 6 p refs 17-04)

(Contract N00014-67-A-0251-0011)

Avail: NTIS HC \$8.50

The characteristics of lasers which may produce danger are briefly discussed with regard to the special characteristics of laser light and also the characteristics they share with other light sources. Types of personnel protection are considered as are regulations and safety programs in relation to the energy and power levels that are currently thought to be nonhazardous. The principles of hazard analysis are described in conjunction with their use at any particular safety level. Two of the programs carried on by the U.S. Navy Medical Department on laser safety are considered in detail. One deals with the functional decrement in visual acuity of monkeys by pulsed laser trains in the near infrared. The other is concerned with the determination of threshold levels for ocular injury by lasers in human volunteers.

Author

N72-26057# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).

LASER SAFETY: SOME CONSIDERATIONS IN THE DESIGN OF A CODE OF PRACTICE

R. G. Borland *In* AGARD Spec. Biophys. Probl. in Aerospace Med., Pt. 3 Mar. 1972 13 p refs
 Avail: NTIS HC \$8.50

Military and industrial research on a safety code for the use of laser equipments is outlined. Data cover safe thresholds, methods for measuring these thresholds, and characteristics of the laser to be used. Special attention is given to retina damage in the operators.
 E.H.W.

N72-26058*# Naval Aerospace Medical Research Lab., Pensacola, Fla.

OCULAR COUNTERROLLING MEASURED DURING EIGHT HOURS OF SUSTAINED BODY TILT

Earl F. Miller, II and Ashton Graybiel 4 Jan. 1972 11 p refs
 (NASA Order T-81633; NASA Order L-43518)
 (NASA-CR-127034; NAMRL-1154) Avail: NTIS HC \$3.00
 CSCI 06S

Adaptation of otolith organ activity was investigated by monitoring the ocular counterrolling response of four normal individuals and three persons with severe bilateral loss of labyrinthine function. Several eye photographs were recorded every 30 minutes during a period of 8 hours in which the subject was held in a lateral tilt (60 deg) position. The recorded eye roll position varied to an expected small extent within each test session; this variation about a given mean roll position was similar among the test sessions for all subjects. The mean roll position, on the other hand, changed from session to session in substantial amounts, but these changes appeared to be random with respect to time and among subjects. Furthermore, the intersessional variation in the mean torsional eye position of the normal subjects was equivalent to that of the labyrinthine-defective subjects who displayed little or no counterrolling. These results suggest that the human counterrolling response is maintained either by essentially nonadapting macular receptors or by extremely fine movements of the head in the gravitational field, such as may have been allowed by the biteboard/headrest restraint system used in this study, which served as an everchanging accelerative stimulus.
 Author

N72-26059# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bad Godesberg (West Germany). Inst. fuer Flugmedizin.

INVESTIGATIONS ON THE BIOLOGICAL EFFECT OF SHOCK WAVES TRANSMITTED THROUGH DIFFERENT MATERIALS

O. Wuensche and G. Scheele 1972 30 p refs *In* GERMAN; ENGLISH summary
 (DLR-FB-72-13) Avail: NTIS HC \$3.50; DFVLR Porz-Wahn; 10,60 DM

The special effect of shock waves transmitted through different materials to animal organs is dealt with. Miniature pigs were used for the study. In particular, the typical and reproducible injuries of organs which are caused by defined shock waves on predetermined body regions are demonstrated, described in detail, and verified by photographs. The morphological findings are discussed, and the particulars of special damage effects are given.
 Author

N72-26060# Joint Publications Research Service, Arlington, Va.
HUMAN ACCLIMATIZATION IN THE POLAR REGIONS

13 Jun. 1972 213 p refs Transl. into ENGLISH from Akklimatizatsiya Cheloveka v Usloviyakh Polyarnykh Rayonov (Leningrad), 1969
 (JPRS-56252) Avail: NTIS HC \$12.75

A collection of reports is presented on acclimatization, adaptation, and psychophysiological aspects of man in the polar regions.
 Author

N72-26061# Joint Publications Research Service, Arlington, Va.
TRANSLATION ON EASTERN EUROPE SCIENTIFIC AFFAIRS, NO. 248

7 Jun. 1972 44 p refs Transl. into ENGLISH from various East European publications
 (JPRS-56202) Avail: NTIS HC \$4.25

Articles are presented concerning the development of, and progress in, various theoretical and applied scientific disciplines and technical fields. Research in the fields of agriculture, computers, and cybernetics, medicine, and electronics is discussed.
 Author

N72-26062# Joint Publications Research Service, Arlington, Va.
MEDICAL INVESTIGATIONS DURING ARCTIC AND ANTARCTIC EXPEDITIONS

A. L. Matusov et al 9 Jun. 1972 109 p refs Transl. into ENGLISH from Tr. Med. Issled. v Arkt. i Antarkt. Ekspeditsiyakh (Leningrad), v. 299, 1971 p 15-49, 78-82, 120-124, 128-131, 177-195, and 231-235
 (JPRS-56225) Avail: NTIS HC \$7.50

Physiological, pathological, and psychological aspects of human acclimatization to the cold polar environment are considered.

N72-26063# Joint Publications Research Service, Arlington, Va.
ACCLIMATIZATION AND HUMAN PATHOLOGY IN ANTARCTICA

A. L. Matusov, N. R. Deryapa, I. F. Ryabinin, I. V. Shastin, and B.B. Vensenotsev *In its* Med. Invest. during Arctic and Antarctic Expeditions 9 Jun. 1972 p 1-32 refs

Avail: NTIS HC \$7.50

In Antarctica predominated physiological versions of human acclimatization to the unusual conditions of a glacial continent and arising pathology assumed, predominantly, a mild form. Established deviations from the norm are restored comparatively easily which is seen by the example of disadapational *metoneuroses*. The role of the distinctive microflora of Antarctica in the development of pathological processes in man is great. The distinctiveness of the course of the wound process and inflammation and their dependence on the phase of acclimatization are established.
 Author

N72-26064# Joint Publications Research Service, Arlington, Va.
CLINICO-PHYSIOLOGICAL CHARACTERISTICS OF THE PROCESS OF ACCLIMATIZATION OF MAN IN ANTARCTICA

N. R. Deryapa *In its* Med. Invest. during Arctic and Antarctic Expeditions 9 Jun. 1972 p 33-46 refs

Avail: NTIS HC \$7.50

Diverse changes in the vital activities of the human organism during polar acclimatization were observed in protective adaptational body functions: disadaptation neurosis, shifts in cardiac reflexes, electrical skin resistance, capillary blood circulation, and skin thermotopography. The use of clinical methods did not reveal essential acclimatizational changes in external respiration, digestion, urination and the peripheral blood; normal indices of physical development were maintained. However, previously existing pathological processes in humans were aggravated during expeditions to Antarctica.
 G.G.

N72-26065# Joint Publications Research Service, Arlington, Va.
BRIEF MEDICO-GEOGRAPHIC CHARACTERISTICS OF THE COURSE OF ACCLIMATIZATION IN MEMBERS OF THE BELLINGSAUZEN POLAR STATION

V. A. Zabarsakin and Yu. G. Shalunov *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 47-54 refs

Avail: NTIS HC \$7.50

Physiological characteristics of human acclimatization to conditions in western Antarctica constituted pain sensations, sleep disturbances, manifestations of irritability and apathy; neuroleptics and tranquilizers usually stopped these symptoms. Some complaints of dyspnea after physical exertions, poor appetite and fatigability were also registered. The greatest number of subjective disturbances occurred during the coldest period of the wintering. G.G.

N72-26066# Joint Publications Research Service, Arlington, Va. **PSYCHOPHYSIOLOGICAL OBSERVATIONS OF POLAR EXPEDITION MEMBERS IN ANTARCTICA**

B. B. Ventsenostsev *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 55-62 refs

Avail: NTIS HC \$7.50

Various psychophysiological test data on polar expedition members are reported that characterize different aspects of higher nervous activity, overall capacity to work, tempo of psychic processes and memory; all indicate improvement during wintering. Also observed is a relatively rapid adaptation of the organism to the conditions of life in coastal Antarctica. G.G.

N72-26067# Joint Publications Research Service, Arlington, Va. **THE DYNAMICS OF SLEEP OF POLAR EXPEDITION MEMBERS OF THE SEVERNY POLYUS-15 (NORTH POLE DRIFTING RESEARCH STATION)**

Yu. A. Paramonov *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 63-67 refs

Avail: NTIS HC \$7.50

Observations of motor activities and the depth and dynamics of sleep during human adaptation to Antarctic conditions are evaluated. Analyses of actograms and statistical processing of sleep duration data show a definite dependence of sleep dynamics on the natural light circle. In the period of polar day, disturbances of sleep occurred but, with the approach of the usual change of day and night, sleep deepened and improved. Also found is a definite dependence of sleep disturbances on the length of service at the Antarctic base. G.G.

N72-26068# Joint Publications Research Service, Arlington, Va. **THE STATE OF THE BLOOD SYSTEM OF POLAR EXPEDITION MEMBERS DURING WINTERING AT MOLODEZH STATION**

B. B. Ventsenostsev *in its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 68-75 refs

Avail: NTIS HC \$7.50

Statistical processing of blood data from polar expedition members shows a somewhat lowered hemoglobin content, lowered erythrocytes, decreased leukocyte levels, and slower erythrocyte sedimentation rates. Observed decreases are associated with the photoperiodism of the polar light regime. G.G.

N72-26069# Joint Publications Research Service, Arlington, Va. **THE CHANGE OF SOME ASPECTS OF THE OXYGEN REGIME IN THE HUMAN ORGANISM DURING PROLONGED STAYS UNDER EXTREME CONDITIONS**

V. S. Poggenpol and Ye. A. Ilin *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 76-85 refs

Avail: NTIS HC \$7.50

Oxygen saturation levels in human arterial blood were studied during prolonged stays in the Antarctic region. Oxygen levels were determined at rest and during the following tests: (1) holding the breath upon inhalation and exhalation; (2) forced hyperventilation; and (3) measured physical exercise. In general, the quantity of oxyhemoglobin was about 10 percent below the norm established for healthy persons. Arterial pressures changed and reached minimum values in the middle of the winter. G.G.

N72-26070# Joint Publications Research Service, Arlington, Va. **A STUDY OF THE FUNCTION OF PULMONARY RESPIRATION AMONG POLAR EXPEDITION MEMBERS IN COASTAL ANTARCTICA**

I. F. Ryabinin and O. V. Korovina *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 86-98 refs

Avail: NTIS HC \$7.50

Analysis of results of spiographic examinations showed that a year's stay of polar expedition members under conditions of the severe climate of coastal Antarctica had no significant effect upon the ventilation indices of pulmonary respiration functions. Data obtained indicate the great adaptational possibilities of the respiration apparatus in man. The deterioration of bronchial permeability revealed in polar expedition members has a direct relation to the mechanism of the rise of dyspnea in polar regions of the earth. Author

N72-26071# Joint Publications Research Service, Arlington, Va. **COMPARATIVE CHARACTERISTICS OF BASIC FORMS OF CLIMATIC CLOTHING OF POLAR EXPEDITION MEMBERS OF VOSTOK STATION**

N. I. Makarov *In its Med. Invest. during Arctic and Antarctic Expeditions* 9 Jun. 1972 p 99-105 refs

Avail: NTIS HC \$7.50

For polar expedition members in the region of the Antarctic plateau, it is necessary to design new climatic clothing which will meet all the requirements for which wool, flannel and other materials are used, attempting to keep them light with a large volume of air under the clothing. As tests showed, the camel hair costume was most adaptable to the conditions. During the use of this type of protective climatic clothing, the duration of stay in the air was greatest and the value of the weighted mean heat flow and the reaction of the cardio-vascular system were minimal. The leather on fur costume was most unfavorable even during relatively mild weather. Author

N72-26072# Oklahoma Univ., Oklahoma City. Health Sciences Center.

EFFECTS OF BACKSCATTER OF BRIEF HIGH INTENSITY LIGHT ON PHYSIOLOGICAL RESPONSES OF INSTRUMENT RATED PILOTS AND NON-PILOTS

Arthur R. Zeiner and Gerhard A. Brecher Feb. 1972 11 p refs (Contract DOT-FA71WA-2545)

(FAA-AM-72-8) Avail: NTIS HC \$3.00.

Thirty-nine human subjects were exposed to repetitive backscatter light stimulation from a Grimes capacitance discharge airplane anticollision light flashing at 1.27 hertz. Both tonic and phasic stimulus-bound occipital EEG, heart rate, respiration, skin potentials, and eyeblinks were recorded. In the first experiment, response decrement to the flashing light occurred only with one out of five response measures over a 40-trial session indicating that the flashing light was a potent stimulus. None of the subjects demonstrated photic driving, seizure activity, or theta wave activity in his EEG. In Experiment II, eyeblink and skin potential measures differentiated between an instrument-rated pilot group and an age-matched control group of non-pilot professional men. The results suggest that, although the flashing anticollision light induces changes in physiological measures which are resistant to habituation, these changes do not extend to the induction of nausea. Author

N72-26073*# Scientific Translation Service, Santa Barbara, Calif.

INHIBITORY EFFECTS OF EXOGENOUS GLUCOSE ON THE BIOSYNTHESIS OF PROTOHEME BY THE YEAST SACCHAROMYCES CEREVISIAE

P. Labbe Washington NASA Jun. 1972 9 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol. (France), v. 165, no. 4, 20 Apr. 1972 p 808-811
(Contract NASw-2035)

(NASA-TT-F-14330) Avail: NTIS HC \$3.00 CSCL 06M

The experiments show that in yeast DAL dehydratase and ferrochelatase are not inhibited by glucose, while DAL synthetase is almost completely inhibited. Author

N72-26074*# George Washington Univ., Washington, D.C. Medical Center.

SCIENTIFIC PUBLICATIONS AND PRESENTATIONS RELATING TO PLANETARY QUARANTINE. VOLUME 5: THE 1971 SUPPLEMENT Biological Sciences Communication Project

Frank D. Bradley and Marcy R. Rettig Jul. 1972 59 p refs
(Contract NSR-09-010-027)

(NASA-CR-127112; GWU-BSCP-72-07P-Vol-5-Suppl) Avail: NTIS HC \$5.00 CSCL 06M

A bibliographic compilation, with approximately 200 listings, on planetary quarantine is presented. Also given are scientific publications, and presentations along with an author index.

E.H.W.

N72-26075# Kernforschungsanlage, Juelich (West Germany). Zentralabteilung Strahlenschutz.

THE CENTRAL DIVISION OF RADIATION PROTECTION Annual Report, 1970 [ARBEITSBERICHT 1970 DER ZENTRALABTEILUNG STRAHLENSCHUTZ]

M. Keller, ed. and R. Tzschaschel, ed. Sep. 1971 190 p refs In GERMAN; ENGLISH summary
(JUL-787-ST) Avail: AEC Depository Libraries

The Zentralabteilung Strahlenschutz (ZST) of the Nuclear Research Establishment, Juelich, is responsible for an adequate and a proper performance of the radiation protection programs for personnel, installations, and the environment in West Germany. This includes the introduction of the necessary organizations as well as the permanent development of measuring methods and procedures according to the most recent knowledge of science and research. Activities during 1970, as well as the results of investigations and developments in connection with the improvement of methods and procedures, are reported. A complete bibliography of the published and internal literature of the ZST in 1970 is included. Author (NSA)

N72-26076# Kansas State Univ., Manhattan. Inst. for Environmental Research.

RESPONSE OF HUMAN SUBJECTS TO REDUCED LEVELS OF WATER CONSUMPTION UNDER SIMULATED CIVIL DEFENSE SHELTER CONDITIONS Final Report, Sep. 1965 - Aug. 1971

Robert L. Gorton, J. M. Rueck, P. E. McNall, Jr., B. Finkelstein, and E. L. Besch Jan. 1972 97 p refs
(Contract DAHC20-68-C-0173)

(AD-738562) Avail: NTIS CSCL 06/6

Seven tests, employing 16 subjects each, were run under carefully controlled environmental conditions similar to expected conditions in civil defense shelters. The purpose of the tests was to determine response of humans to limited water rations under such conditions. A computational method was developed for determination of body water pool loss. Nutritional, physiological and psychological testing was conducted to measure subject response to the various water rations. Results including subject weight losses and water budgets are presented. Results were analyzed and a correlation equation for water pool loss was

developed. It was determined by extrapolation of these results that a water ration of 1 3/4 quarts per person per day for 14 days should prevent severe dehydration of subjects under the conditions of these tests. GRA

N72-26077 Louisiana State Univ., Baton Rouge.

A HUMAN MODEL WHICH OPTIMIZES PURSUIT TRACKING Ph.D. Thesis

Mario Joseph Caluda, Jr. 1971 144 p

Avail: Univ. Microfilms Order No. 71-29348

The feasibility of using an adaptive linear mathematical model to represent a human operator subjected to the task of controlling an attacking fighter aircraft was investigated. The ability of the model to perform pursuit tracking tasks subject to random evader tactics was analyzed by the implementation of the model into a six degree of freedom digital fire control simulation. For the model to approach reality in every flight regime, an adaptive procedure was incorporated into the simulation to adjust the variable gain and lead time parameters of the human model. As a means of evaluating the simulated performance of the human operator when performing this task, the performance data of the attacking aircraft was subjected to a number of spectral analysis operations. These spectral operations compared the frequency content of the data obtained from the simulation to actual data obtained from combat flight maneuvers. For both sets of data the evaders performed the same identical tactics. Dissert. Abstr.

N72-26078 Connecticut Univ., Storrs.

HUMAN OPERATOR DYNAMICS FOR AUDIO COMPENSATORY TRACKING Ph.D. Thesis

Edward Wayne Vinje 1971 189 p

Avail: Univ. Microfilms Order No. 71-29924

Tracking error was presented to the test subjects using one- and two-ear displays. For both displays the pitch of the tone represented the magnitude of the tracking error. Error polarity was indicated in the two-ear display by switching the tone between ears as a function of error sign. For the one-ear display, error polarity was indicated by using modulated and unmodulated tones. The operator's aural control characteristics were modeled as a describing function plus a remnant. The describing function and remnant data indicate that humans can control as well with audio cues as with visual cues for the task considered. However, the reduction in operator time delays, expected because of the generally faster human response to audio stimuli, was not evident in the results. It was also determined that the operators could control equally well with either the one- or two-ear display. The operator model results indicate that the combined audio and visual presentation of tracking error neither improves the operator's control capability nor reduces operator time delays. Dissert. Abstr.

N72-26079*# Lockheed Missiles and Space Co., Sunnyvale, Calif.

DEVELOPMENT OF A SORBER TRACE CONTAMINANT CONTROL SYSTEM INCLUDING PRE- AND POST-SORBERS FOR A CATALYTIC OXIDIZER

Thomas M. Olcott Washington NASA May 1972 185 p refs
(Contract NAS1-9242)

(NASA-CR-2027) Avail: NTIS HC \$3.00 CSCL 06K

A general methodology was developed for spacecraft contaminant control system design. Elements considered for contaminant control were catalytic oxidation with isotope or electrical heat and pre- and post-sorbers, charcoal with regeneration and non-regeneration, and reactive constituents. A technique is described for sizing a charcoal bed for a multiple contaminant load. Author

N72-26080*# Massachusetts Inst. of Tech., Cambridge. Dept. of Nutrition and Food Science.

MECHANISMS OF DETERIORATION OF INTERMEDIATE MOISTURE FOOD SYSTEMS

Theodore P. Labuza Washington NASA Jun. 1972 149 p refs

(Contract NAS9-9426)

(NASA-CR-114861) Avail: NTIS HC \$9.50 CSCL 06H

A study of shelf stability in intermediate moisture foods was made. Major efforts were made to control lipid oxidation and nonenzymatic browning. In order to determine means of preventing these reactions, model systems were developed having the same water activity content relationship of intermediate moisture foods. Models were based on a cellulose-lipid and protein-lipid system with glycerol added as the humectant. Experiments with both systems indicate that lipid oxidation is promoted significantly in the intermediate moisture range. The effect appeared to be related to increased mobility of either reactants or catalysts, since when the amount of water in the system reached a level where capillary condensation occurred and thus free water was present, the rates of oxidation increased. With added glycerol, which is water soluble and thus increases the amount of mobile phase, the increase in oxidation rate occurs at a lower relative humidity. The rates of oxidation were maximized at 61% RH and decreased again at 75% RH probably due to dilution. No significant non-enzymatic browning occurred in the protein-lipid systems. Prevention of oxidation by the use of metal chelating agents was enhanced in the cellulose system, whereas, with protein present, the lipid soluble chain terminating antioxidants (such as BHA) worked equally as well. Preliminary studies of foods adjusted to the intermediate moisture range bear out the results of oxidation in model systems. It can be concluded that for most fat containing intermediate moisture foods, rancidity will be the reaction most limiting stability. Author

N72-26081# Joint Publications Research Service, Arlington, Va. **MAN IN PROLONGED SPACE FLIGHT**

V. A. Shatalov 6 Jun. 1972 13 p Transl. into ENGLISH from Nauka i Zhizn' (Moscow), no. 3, Mar. 1972

(JPRS-56181) Avail: NTIS HC \$3.00

An interview with Maj. Gen. V. A. Shatalov on the peculiarities of space flight and the training of cosmonauts for such flight is presented. Author

N72-26082# Loughborough Univ. of Technology (England). Dept. of Transport Technology.

A SURVEY INTO THE ANNOYANCE CAUSED BY AIRCRAFT NOISE AND ROAD TRAFFIC NOISE

C. G. Bottom and D. M. Waters [1972] 39 p refs

(TT-7204) Avail: NTIS HC \$4.00

The results of a social survey designed to investigate the influence of background (road traffic) noise on annoyance due to aircraft noise, and on general dissatisfaction with the total noise environment are presented. Nine sites with 3 aircraft and 3 traffic conditions were selected and 35 people per site interviewed. The regression lines for site mean aircraft annoyance scores (Guttman Scale) for each traffic condition show that the same annoyance score is achieved at an aircraft exposure 10 NN1 lower, when traffic is reduced from heavy to access only. The general noise dissatisfaction shows an increase with traffic at low NN1, but a decrease at high NN1. The use of the noise pollution level unit satisfactorily explains this result, increasing the correlation coefficient for the grouped data from 0.94 against NN1 to 0.96. Author

N72-26083# Joint Publications Research Service, Arlington, Va. **MAN IN THE CONTROL SYSTEM**

V. A. Trapeznikov 15 Jun. 1972 18 p Transl. into ENGLISH

from Nauka i Zhizn' (Moscow), no. 2, 1972 p 2-10

(JPRS-56277) Avail: NTIS HC \$3.00

Human behavior in a control system is considered, as man and technical control means. Author

N72-26084# Joint Publications Research Service, Arlington, Va. **THE PRINCIPLES OF AN ACTIVE OPERATOR AND THE FUNCTIONAL DISTRIBUTION BETWEEN MAN AND MACHINE**

N. D. Zavalova, B. F. Lomov, and V. A. Ponomarenko 19 Jun. 1972 13 p refs Transl. into ENGLISH from Vopr. Psikhologii (Moscow), no. 3, 1971 p 3-12

(JPRS-56297) Avail: NTIS HC \$3.00

The role of man in control systems is considered and various approaches in engineering psychology are discussed. A proficiency analysis study is cited as an example. Author

N72-26085*# Scientific Translation Service, Santa Barbara, Calif.

METHOD OF STUDYING THE REACTIONS OF A HUMAN OPERATOR CONSIDERED AS AN OSCILLATORY SYSTEM TO HARMONIC AND RANDOM VIBRATIONAL ACTION

K. V. Frolov Washington NASA Jun. 1972 13 p refs Transl. into ENGLISH from the book "Primeneniye Teorii Nelineynykh Kolebaniy v Mekhan.", 5th Intern. Conf. on Nonlinear Oscillations, Trans., Kiev, 25 Aug. - 4 Sep. 1969" Kiev, Akad. Nauk Ukr. SSR, v. 3, 1971 p 695-703

(Contract NASw-2035)

(NASA-TT-F-14289) Avail: NTIS HC \$3.00 CSCL 05E

The results are presented of an experimental study of the dynamic responses and functional state of a human operator subjected to harmonic and random vibrational excitation. A number of problems involved in obtaining objective estimates of the effect of vibrations of various types and spectral compositions on human operators are considered. Some possible ways of constructing human-operator models which are essentially nonlinear oscillatory systems of complex dynamical structure are indicated, and methods of investigating these models are suggested. Author

N72-26086# Southampton Univ. (England). Inst. of Sound and Vibration Research.

SECONDARY TASK PERFORMANCE OF HELICOPTER PILOTS DURING LOW-LEVEL FLIGHT

B. K. Nagaraja Rao and M. J. Griffin Dec. 1971 61 p refs Sponsored by Min. of Defense

(ISVR-TR-54) Avail: NTIS HC \$5.25

An investigation was made into the changes of pilot performance at a complex reaction time task during low-level helicopter flight. The two-choice task required responses to a continuous and a similar tone pulse 6 Hz pitch repetition frequency. The mean reaction times for eight pilots are tabulated and commented upon. An extensive bibliography is appended.

Author (ESRO)

N72-26087# Texas Technological Univ., Lubbock. Center of Biotechnology and Human Performance.

PERFORMANCE, RECOVERY, AND MAN MACHINE EFFECTIVENESS Semiannual Progress Report, 1 Sep. 1971 - 29 Feb. 1972

Richard A. Dudek 15 Mar. 1972 25 p refs

(Contract DAAD05-69-C-0102; DA Proj. 1TO-14501-B-81-A)

(AD-738916) Avail: NTIS CSCL 05/8

Emphasis is placed on the determination of optimal or near optimal work/rest schedules for individuals and crews to yield high performance with minimal decrement over time followed by

recovery (after rest) to an acceptable high performance. The experimentation is further aimed at consideration of various task levels and differing conditions of environment. Experimentation in progress continues to focus attention on the assessment of human performance under continuous operations or relatively long term activity (2 hours or more of activity). GRA

N72-26088# Naval Postgraduate School, Monterey, Calif.
A HEART BEAT ACCUMULATOR FOR RESEARCH IN EXERCISE PHYSIOLOGY M.S. Thesis
 Richard Alexander Creighton Jun. 1971 44 p refs
 (AD-738882) Avail: NTIS CSCL 06/2

A system is postulated to count the total number of heart beats in one day. The device is intended for use as a possible indicator of the level of physical fitness of an individual. It is portable, self-contained, and provides for comfortable and natural movement of the subject during the course of daily activities. Electronic design is developed including detailed schematic diagrams of all electronic circuitry involved. The complete plans and photographs of a working prototype are presented. The prototype is to be further tested and evaluated in the exercise physiology laboratory at California State College at Long Beach. It is hoped that this device will prove to be of value in studies and research in physical fitness. Author (GRA)

N72-26089# Harvard Univ., Boston, Mass. Dept. of Psychiatry.
AUTOMATED CONSTANT CUFF PRESSURE SYSTEM TO MEASURE AVERAGE SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN MAN

Bernard Tursky, David Shapiro, and Gary E. Schwartz Dec. 1971 28 p refs
 (Contract N00014-67-A-0298-0024; VR Proj. 144-207)
 (AD-738832; TR-4) Avail: NTIS CSCL 06/2

An automated constant cuff-pressure system to remotely determine average human blood pressure levels was developed to overcome problems in measurement caused by natural beat-to-beat fluctuations in arterial pressure. A standard blood pressure cuff is inflated to approximately systolic pressure for a prescribed number of heart cycles. Korotkoff (K) sounds are picked up by a crystal microphone over the brachial artery. The ECG is recorded and an electronic coincidence circuit detects the number of R waves followed by a K sound. Cuff pressure is automatically adjusted until there is a 50% coincidence of R-K sounds. This cuff pressure is now by definition the median systolic pressure. The same procedure is followed to determine median diastolic pressure. A change in 2 mm Hg in cuff pressure alters the R-K coincidence by 25%, insuring an accuracy of measurement of plus or minus 2 mm Hg. Average measures of pressure obtained by the constant cuff pressure method were demonstrated to be as accurate as averages based on intra-arterial readings. Application of this system in epidemiological screening is discussed. Author (GRA)

N72-26194# Joint Publications Research Service, Arlington, Va.
MAN IN CONTROL SYSTEM
 V. A. Trapeznikov *In its Mater.* on Fifth All-Union Controls Conf. 13 Jun. 1972 p 1-17 refs
 Avail: NTIS HC \$5.00

Man's behavior in technical, and socioeconomic control systems is discussed in terms of three types of problems: (1) how to organize the control structure with a correct distribution of functions between man and the automatic machine; (2) how to organize the relationship between man and the automatic machine; and (3) how to make man strive. Feedback and game situations are considered for social and economic control systems. It is concluded that man is the main resource, and the mobilization of all his psychological reserves, along with the use of control hardware will greatly speed up scientific and technical progress and the nation's development. F.O.S.

N72-26278*# Maryland Univ., College Park.
REMOTE SENSING AND EXTRACTABLE BIOLOGICAL RESOURCES

L. Eugene Cronin *In* NASA, Washington Remote Sensing of the Chesapeake Bay 1972 p 83-89 refs

Avail: NTIS; SOD \$2.25 CSCL 08A

The nature and quantity of extractable biological resources available in the Chesapeake Bay are discussed. The application of miniaturized radio sensors to track the movement of fish and birds is described. The specific uses of remote sensors for detecting and mapping areas of algae, red tide, thermal pollution, and vegetation beds are presented. The necessity for obtaining information on the physical, chemical, and meteorological features of the entire bay in order to provide improved resources management is emphasized. Author

N72-26768*# National Aeronautics and Space Administration.
 Manned Spacecraft Center, Houston, Tex.
SURVEYOR 3: BACTERIUM ISOLATED FROM LUNAR RETRIEVED TELEVISION CAMERA

F. J. Mitchell (Texas A&M Univ., College Station) and W. L. Ellis *In its Analysis of Surveyor 3 Mater. and Phot. Returned by Apollo 12* 1972 p 239-248 refs
 Avail: NTIS; SOD \$4.00 CSCL 06M

Microbial analysis was the first of several studies of the retrieved camera and was performed immediately after the camera was opened. The emphasis of the analysis was placed upon isolating microorganisms that could be potentially pathogenic for man. Every step in the retrieval of the Surveyor 3 television camera was analyzed for possible contamination sources, including camera contact by the astronauts, ingassing in the lunar and command module during the mission or at splashdown, and handling during quarantine, disassembly, and analysis at the Lunar Receiving Laboratory K.P.D.

N72-26769*# Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.

MICROBIOLOGICAL SAMPLING OF RETURNED SURVEYOR 3 ELECTRICAL CABLING

M. D. Knittel, M. S. Favero (Public Health Serv., Phoenix, Ariz.), and R. H. Green *In* NASA, Washington Analysis of Surveyor 3 Mater. and Phot. Returned by Apollo 12 1972 p 248-251 refs

Avail: NTIS; SOD \$4.00 CSCL 06M

A piece of electrical wiring bundle running from the television camera to another part of the spacecraft was selected for microbiological examination. Sampling methods are discussed. The results presented show that no viable microorganisms were recovered from the part of the Surveyor 3 cable which was tested. Factors that could have contributed to the sterility of the cable are thermal vacuum testing, natural dieoff, change in pressure during launch, and lunar vacuum and temperature. K.P.D.

N72-26857 Johns Hopkins Univ., Baltimore, Md.
FINITE AMPLITUDE SHOCK WAVES IN INTERVERTEBRAL DISCS

William F. Hartman *In* Shock and Vibration Inform. Center The Shock and Vibration Bull., No. 42, Pt. 2 Jan. 1972 p 213-219 refs

Avail: Shock and Vibration Information Center, Naval Research Labs., Washington, D. C.: HC \$40.00 per set

The nonlinear deformation of intervertebral discs is discussed. The upward turning stress-strain curve implies that the discs will tend to shape pulses having sub-millisecond rise-times into shock waves and that shock inputs will propagate as shocks. These implications are explored for axial compressive impact of the spine, such as is incurred during aircraft-pilot ejection or during a fall onto the buttocks. Correlation with experimental results suggests that the application of finite amplitude wave theory to the shock loading of the spine should be investigated. Author

N72-27060* National Academy of Sciences-National Research Council, Washington, D.C.

PHOTOSYNTHESIS

Roderick Clayton *In its Solar Cells: Outlook for Improved Efficiency* 1972 p 71-73

CSCL 06C

Photosynthesis is discussed in terms of photovoltaic technology. The efficiency of the photosynthesis in plants, and the possible impact on photovoltaic technology are considered.

F.O.S.

N72-27074 National Lending Library for Science and Technology, Boston Spa (England).

ACTIVATION OF BIOLOGICAL PROPERTIES OF STAPHYLOCOCCI ISOLATED FROM PERSONS DURING A PROLONGED STAY IN AN AIRTIGHT CHAMBER

V. Ya. Prokhorov, V. M. Shilov, A. K. Akatov, and I. A. Parchinskaya May 1972 8 p refs Transl. into ENGLISH from Zh. Mikrobiol. Epidemiol. i Immunobiol. (Moscow), v. 48, no. 9, 1971 p 63-68

(NLL-RTS-7117) Avail: Natl. Lending Library, Boston Spa, Engl.: £ 0.70; 2 NLL photocopy coupons

The biological properties of staphylococci isolated from human subjects in the course of a 12-month medical engineering experiment were determined. Efforts were also made to determine if an exchange of microorganisms between the subjects can take place. A combined investigation was carried out to differentiate between pathogenic and nonpathogenic staphylococci. Seeding materials were taken from the nasal mucosa. Besides phage typing, the isolated strains were tested for the presence of enzymes, haemolysins, toxin formation, sensitivity to antibiotics, and virulence. Conclusions show that for long periods of time in a pressurized cabin, pathogenic staphylococci are transmitted from one to another. It was suggested that such activity is associated with the development of diseases of staphylococcal aetiology. Staphylococci strains isolated from humans show increased biological activity.

Author

N72-27075 National Lending Library for Science and Technology, Boston Spa (England).

REACTION MECHANISM OF Na(PLUS)-K(PLUS) DEPENDENT ATP-ase

T. Kanazawa Apr. 1972 47 p refs Transl. into ENGLISH from Seikagaku (Tokyo), v. 42, no. 10, 1970 p 1-24 (777-801)

(NLL-RTS-6898) Avail: Natl. Lending Library, Boston Spa, Engl.: £ 4.50; 15 NLL photocopy coupons

The association of the active transport of Na(+) and K(+) and the decomposition of ATP by the enzyme are assumed to be significant in elucidating the molecular mechanism of active transport. ATP-ADP cross reactions and the phosphorylation of enzyme proteins are considered. The reaction rate theory analysis of the stationary state is presented. The decomposition reaction of the phosphorylation intermediate (EP) and the EP formation are also considered.

K.P.D.

N72-27076* National Aeronautics and Space Administration, Washington, D.C.

AEROSPACE MEDICINE AND BIOLOGY: A CONTINUING BIBLIOGRAPHY WITH INDEXES, SUPPLEMENT 102, MAY 1972

May 1972 147 p refs

(NASA-SP-7011(102)) Avail: NTIS HC \$3.00 CSCL 06E

This special bibliography lists 456 reports, articles, and other documents introduced into the NASA scientific and technical information system in April 1972.

Author

N72-27077* Food and Drug Administration, Cincinnati, Ohio. Div. of Microbiology.

ECOLOGICAL AND THERMAL INACTIVATION OF MICROBES

IN AND ON INTERPLANETARY SPACE VEHICLE COMPONENTS Quarterly Progress Report, 1 Jan. - 31 Mar. 1972

A. L. Reyes, A. J. Wehby, R. G. Crawford, J. C. Wimsatt, and J. E. Campbell 1 Jun. 1972 11 p

(NASA Order R-36-015-001)

(NASA-CR-127525; QPR-28) Avail: NTIS HC \$3.00 CSCL 06M

The pregermination phenomenon of spores relative to thermal activation and 100% relative humidity is examined. Attempts were also made to determine the effects of suspending media on the spores. Results show spores treated initially in TGE broth lost their heat resistance in contrast to those treated in 2X distilled water. Morphological changes of spores when viewed under phase microscopy are compared to those assayed by a plate count method.

E.H.W.

N72-27078* Mayo Clinic, Rochester, Minn.

EFFECTS PLUS Gy ACCELERATION ON BLOOD OXYGEN SATURATION AND PLEURAL PRESSURE RELATIONSHIPS IN DOGS BREATHING FIRST AIR, THEN LIQUID FLUOROCARBON IN A WHOLE BODY WATER IMMERSION RESPIRATOR

D. J. Sass, E. L. Ritman, P. E. Caskey, J. Greenleaf, N. Banchero, D. Mair, and E. H. Wood [1972] 16 p refs Repr. from AGARD Conf. Proc. no. 82 Sponsored in part by the Navy

(Grant NGR-24-003-001; Contract F41609-69-C-0058; Grant NIH HE-3532)

(NASA-CR-127262) Avail: NTIS HC \$3.00 CSCL 06E

A total body water immersion, mechanical respiration, body support assembly has been used with dogs on the human centrifuge to compare effects of +1 Gy and +6 Gy acceleration on cardiovascular and respiratory function in dogs under three conditions: (1) normal respiration in air; (2) totally immersed in a saline-filled respiratory chamber providing control of respiratory rate, tidal and residual volumes when breathing air or oxygen; and (3) when respired in the same manner with oxygenated liquid fluorocarbon. Intrathoracic pressures were recorded by strain-gauge manometers connected to fluid-filled catheters introduced without thoracotomy into the thoracic aorta, pulmonary artery, right and left atria, left pulmonary vein, and right and left pleural spaces. Three cuvette oximeters measured oxygen saturation of blood continuously withdrawn from the thoracic aorta, pulmonary artery, and left pulmonary vein. Oxygen saturation measurements and intrathoracic pressures were analyzed on-line by a CDC 3300 digital computer. Results are included.

Author

N72-27079* Translation Consultants, Ltd., Arlington, Va.

THE EXISTENCE AND ACTIVITY OF THYROCALCITONIN IN MAN

G. Milhaud, M. S. Moukhtar, J. Bourichon, and A. M. Perault Washington NASA Jun. 1972 7 p refs Transl. into ENGLISH from Compt. Rendu Acad. Sci. (Paris), v. 261, 1965 p 4513-4516

(Contract NASw-2038)

(NASA-TT-F-14341) Avail: NTIS HC \$3.00 CSCL 06P

The hypocalcemic activity of extracts purified from six human thyroids in rats, or monkeys, is shown. Hog thyrocalcitonin injected in man can result in a reduction in the calcemia.

Author

N72-27080* Civil Aeromedical Inst., Oklahoma City, Okla.

A COMPARISON OF SERUM CHOLINESTERASE METHODS, 2

Charles R. Crane, Donald C. Sanders, and John K. Abbott Mar. 1972 9 p refs

(FAA-AM-72-12) Avail: NTIS HC \$3.00

Among aerial applicator personnel, the primary value of periodic blood cholinesterase (ChE) assays is the detection of

pesticide poisoning indicated by a decrease in enzyme activity since the previous (or pre-season) assay. Comparison of these values is difficult if they are based on different methodologies and expressed in different units, which is frequently the case. An evaluation was made of four serum or plasma ChE methods which are currently in use and the relationships for interconversion among their respective units are established. This was accomplished by performing simultaneous assays by each method on a series of samples whose activities covered the range from normal levels down to the very low level found in organophosphate-poisoned individuals. The resulting conversion data (regression equations) are also compatible with those described in other investigations. Author

N72-27081*# Scientific Translation Service, Santa Barbara, Calif.

SPACE BIOLOGY

A. A. Imshenetskiy Washington NASA Jul. 1972 37 p refs Transl. into ENGLISH from Usp. Mikrobiol. (USSR), no. 7, 1971 p 46-66

(Contract NASw-2035)

(NASA-TT-F-14307) Avail: NTIS HC \$4.00 CSCL 06M

The results of studies on microorganisms with a direct bearing on space biology are presented. The experimental studies have indicated that certain enzymes are stable when exposed to an ultrahigh vacuum; synergism occurs when two bacteriocidal gases are used; and certain microbes can grow, even if the substrate moisture level is very low. Author

N72-27082*# Louisiana State Univ., Baton Rouge. Dept. of Electrical Engineering.

SELECTED BIBLIOGRAPHY ON THE MODELING AND CONTROL OF PLANT PROCESSES

Murli Monahar Viswanathan and Paul M. Julich 1972 18 p refs

(Grant NGR-19-001-024)

(NASA-CR-127426) Avail: NTIS HC \$3.00 CSCL 02D

A bibliography of information pertinent to the problem of simulating plants is presented. Detailed simulations of constituent pieces are necessary to justify simple models which may be used for analysis. Thus, this area of study is necessary to support the Earth Resources Program. The report sums up the present state of the problem of simulating vegetation. This area holds the hope of major benefits to mankind through understanding the ecology of a region and in improving agricultural yield. Author

N72-27083# National Research Council of Canada, Ottawa (Ontario).

NEW APPROACH TO THE CONTROL OF MUSCULAR ACTIVITY

L. S. Aleev 1972 11 p refs Transl. into ENGLISH from Nauchnyi Sovet po Kibernetike, Akad. Nauk Ukr. SSR, Sektsiya Kibernetiki KDNTF (Kiev), 1966 p 102-113

(NRC-TT-1551) Avail: NTIS HC \$3.00

A system of bioelectric control of certain motions of man was developed. The system is based on a study of changes in the bioelectric activity of functional-dynamic groups in the space-time ratio on accomplishing active motor actions in different planes. Preliminary tests of the control device were carried out at a neurological clinic for the treatment of motion disturbances caused by a cutoff of the nucleus of the motor analyzer. Encouraging results were obtained and it was concluded that the method provides a new approach to the problem of controlling the motions of man under normal conditions and certain specific conditions, as well as in the treatment of certain motor disturbances. D.L.G.

N72-27084*# Illinois Univ., Urbana. Engineering Experiment Station.

STEADY STATE AND TRANSIENT TEMPERATURE

DISTRIBUTIONS IN THE HUMAN THIGH COVERED WITH A COOLING PAD

R. J. Leo, A. Shitzer, J. C. Chato, and B. A. Hertig Jun. 1971 83 p refs

(Grant NGR-14-005-103)

(NASA-CR-127523; ME-TR-286) Avail: NTIS HC \$6.25 CSCL 06P

An analytical and experimental study was done on the performance of cooling pads attached to a human thigh. Each cooling pad consisted of a long, water cooled tube formed into a serpentine shape with uniform spacing between the parallel sections. The analytical work developed a cylindrical model for the human thigh. The transient times predicted by this model ranged from 25 to 80 minutes, which is reasonably close to the experimental results. Calculated and measured steady state temperature profiles were in fair agreement. The transient times associated with a change from a high metabolic rate of 1800 Btu/hr (528 w) to a low level of 300 Btu/hr (88 w), were found to be about 120 minutes. A change from 300 Btu/hr (264 w) to 300 Btu/hr (88 w) resulted in 90 to 100 minute transients. However, the transient times for a change in metabolic rate in the opposite direction from 300 Btu/hr (88 w) to 1800 Btu/hr (528 w) were 40 to 60 minutes. Author

N72-27085# Illinois Univ., Savoy. Aviation Research Lab.

PILOTAGE ERROR IN AREA NAVIGATION: PERFORMANCE OF INSTRUMENT PILOTS USING SYMBOLIC DISPLAYS Final Report, 1 Apr. 1970 - 31 Mar. 1971

Richard S. Jensen, Richard J. Vanderkolk, Patrick Fitzhenry, Donald J. Rose, and Stanley N. Roscoe May 1971 181 p refs (Contract DOT-FA70WA-2322)

(AD-739309; ARL-71-11/FAA-71-1; FAA-RD-71-31) Avail: NTIS CSCL 05/10

Pilotage errors in area navigation were measured both in flight and in a flight simulation laboratory. Experimental procedures were designed to test instrument pilots under relatively demanding flight situations representative of IFR terminal area and final approach operations. Experimental display variables include linear versus angular steering error indications, steering error scale factor, and integrated versus separated presentations of heading and course deviation. Although the data are preliminary, steering error magnitudes were generally consistent with those assumed in Advisory Circular AC 90-45 provided an appropriate scale factor is used. Relatively frequent procedural blunders occurred in the operation of currently typical RNAV controls. Pilot performances in the simulator were comparable to those observed under similar task conditions in flight, thereby supporting the use of the simulator in more systematic studies of display, control, and procedural variables in area navigation. Author (GRA)

N72-27086# School of Aerospace Medicine, Brooks AFB, Tex. BIOACOUSTIC NOISE PROBLEMS DURING OPERATION OF C-7A CARIBOU AIRCRAFT Final Report, Jun. - Nov. 1970

Donald C. Gasaway Dec. 1971 25 p refs

(AF Proj. 7755)

(AD-738627; SAM-TR-71-12) Avail: NTIS CSCL 06/19

Noise environments within the DeHavilland C-7A Caribou during various phases of ground and airborne operation are illustrated and described. Noise profiles are provided to identify and describe exposures to noise encountered by unprotected personnel at different occupied locations in the C-7A during takeoff, climb, and cruise. Features of aeromedical significance are also identified and discussed. Author (GRA)

N72-27087# School of Aerospace Medicine, Brooks AFB, Tex. HAZARD STUDY OF SIX HELIUM-NEON LASER BORESIGHTS Final Report

William A. Fife and Melvin B. Dobbs Feb. 1972 13 p

(AF Proj. 7784)

(AD-738629; SAM-TR-72-5) Avail: NTIS CSCL 06/18

Six helium-neon laser boresights at US Air Force bases in the continental United States were surveyed to determine their output power. The study indicated the measured output power of these devices to be significantly below their rated output power of 1.3 mW. The measured output power ranged from 0.97 to 0.14 mW. The laser boresights surveyed do not constitute eye hazards as defined in AFM 161-8 (C1), 27 September 1971. Author (GRA)

N72-27088# Navy Experimental Diving Unit, Washington, D.C.
REVIEW AND ANALYSIS OF CASES OF DECOMPRESSION SICKNESS OCCURRING UNDER PRESSURE Final Report
 James K. Summitt and Thomas E. Berghage 1 Dec. 1971
 54 p refs

(AD-737700; NEDU-RR-12-71) Avail: NTIS CSCL 06/19

The increased frequency of decompression sickness occurring while the diver is still under pressure necessitates establishment of a standardized procedure to treat those cases which are beyond the scope of currently accepted treatment tables. Helium diving accident and treatment data were analyzed to evaluate the therapeutic adequacy of the treatment procedures that have been used for treating the helium diver stricken while under pressure; to delineate precipitant factors which may be important in the etiology or treatment of decompression sickness occurring under pressure during helium dives; to extract from the data any parameters which appeared to be related to a more adequate or effective treatment profile; and, finally, to outline treatment procedures which could be used in the management of decompression sickness occurring under pressure. Author (GRA)

N72-27089# Texas Technological Univ., Lubbock.
MONITORING PERFORMANCE ACROSS SENSE MODES: AN INDIVIDUAL DIFFERENCES APPROACH

Dolores M. Tyler, Wayne L. Waag, and Charles G. Halcomb Jan. 1972 31 p refs

(Contract DAAD05-69-C-0102)

(AD-737735) Avail: NTIS CSCL 05/10

The investigation attempted to equate task difficulty across sense modes on an individual basis. The critical dimension for the detection task used in the investigation was stimulus duration. For each subject, stimulus durations were obtained for both visual and auditory presentation which resulted in similar detection rates. These uniquely determined values were then defined as signals in a later monitoring task. Author (GRA)

N72-27090# Whittaker Corp., Waltham, Mass. Space Sciences Div.

DEVELOPMENTS IN MODELLING VISUAL-VESTIBULAR INTERACTIONS Final Report

Laurence R. Young Nov. 1971 93 p refs

(Contract F33615-69-C-1425; AF Proj. 7231)

(AD-737795; AMRL-TR-71-14) Avail: NTIS CSCL 06/19

An earlier report described a physical analog of the human vestibular system, which simulated nystagmic eye movements and subjective sensation of motion based on sensed motion of the head. This report reviews a number of possible extensions to this model--emphasizing the complex interactions among visual, otolith, and canal stimuli. Models are discussed for semicircular canals and otoliths, the vestibulo-ocular reflex, optokinetic and galvanic stimulation of eye movements, counterrolling, visual-vestibular interaction and pursuit eye movements.

Author (GRA)

N72-27091# School of Aerospace Medicine, Brooks AFB, Tex. Aerospace Medical Div.

AN AUTOMATED, SIX-CHANNEL, DISCRETE-SAMPLE

ELECTROLYTE ANALYZER Final Report, Oct. 1969 - Aug. 1970

George E. Westlake and Wendell R. Peters Jan. 1972 22 p
 Submitted for publication

(AF Proj. 7996)

(AD-737568; SAM-TR-72-1) Avail: NTIS CSCL 06/12

A six-channel discrete-sample analyzer (the RPT-720) capable of analyzing clinical specimens at the rate of 120 samples per hour is described. The machine is designed for an electrolyte battery consisting of sodium, potassium, chloride, bicarbonate, calcium, and phosphate. The machine uses ultramicro quantities of serum averaging around 29 microliters of sample per test. The basic principle of operation is use of a peristaltic pump to transfer sample and reagents from the sample turntable to the reaction turntable.

Author (GRA)

N72-27092# Naval Ship Research and Development Center, Bethesda, Md.

THE POSITION OF EARDRUM RUPTURE AND HEARING LOSS IN THE SCALE OF INJURIES FROM NUCLEAR BLAST

Joseph Gesswein and Paul Corrao Feb. 1972 36 p refs

(AD-737643; NSRDC-3789) Avail: NTIS CSCL 06/5

The scanty data available on human eardrum rupture from blast pressure suggest a normal distribution of rupture about a median overpressure of 15 psi. More abundant data are available on blast-induced eardrum rupture in animals, but their value is limited because of the lack of scaling laws. Consequently, predictions for human injury stem from clinical experiences. As an injury mode to shipboard personnel, eardrum rupture will be of secondary importance to other blast-induced injuries. In fact, rupture itself may be beneficial to the individual by preventing damage to the middle ear. However, hearing loss associated with blast pressure or rupture itself will compromise normal voice communication. Although ear protection is advisable, it should be made available only in conjunction with protection against other blast effects.

Author (GRA)

N72-27093# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

THE EFFECTS OF HIGH INTENSITY NOISE ON HUMAN EQUILIBRIUM

C. Stanley Harris and Henning E. vonGierke Dec. 1971 24 p
 refs. Presented at Aerospace Medical Assoc. Meeting, Washington, D. C., Apr. 1967

(AF Proj. 7231)

(AD-737826; AMRL-TR-67-41) Avail: NTIS CSCL 06/19

Five experiments were conducted on the effects of broadband, high intensity noise on human equilibrium. The ability of subject to balance on narrow rails was measured during exposure to the noise and immediately after termination of the noise. Four different noise conditions were used in each experiment: control, 120, 130, and 140 dB (re. 0.0002 dyne/sq cm). In the first experiment subjects wore earmuffs and earplugs; in the second, only earplugs were worn; and in the third experiment, subjects wore earplugs and one earmuff to produce an asymmetrical exposure. At an ambient level of 140 dB, a detrimental effect was obtained in all three experiments. At lower intensities of noise, there were performance decrements only for the asymmetrical exposure. In the remaining two experiments, conducted after termination of the noise, detrimental effects were obtained for asymmetrical auditory exposure but not for equal auditory exposure. The results of these experiments are interpreted as a possible quantitative demonstration of the direct effect of high intensity noise on the vestibular system.

Author (GRA)

N72-27094# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

ANALYSIS OF THE VESTIBULO-OCULAR COUNTERROLL

REFLEX IN PRIMATES Final Report

A. M. Junker, C. R. Replogle, K. A. Smiles, R. D. Brown, and R. Wheeler Nov. 1971 18 p refs
(AF Proj. 7222)

(AD-737828; AMRL-TR-71-59) Avail: NTIS CSCL 06/19

The vestibulo-ocular reflex manifested by counterroll was used to determine the response dynamics of the vestibular system and alterations in these dynamics subsequent to -Gx exposure. Six rhesus monkeys were tested before and after acceleration exposure to determine if significant changes had occurred in the vestibulo-ocular counterroll reflex. The tests consisted of constant speed rotation, pendular oscillations and multiple sine wave oscillations about the subject's cyclopean axis. Ocular counterroll was recorded using a linear resolver mechanically fixed to the monkey's eyeball. The data collected were analyzed by use of the Fast Fourier Transform. This work demonstrates that there is no significant decrease in the system gain with inputs up to 1 Hz; the observed phase lag can be accounted for by a time delay of approximately 0.2 seconds, and there is no significant response alteration caused by acceleration loading up to 75 -Gx.

Author (GRA)

N72-27095# Texas A&M Univ., College Station. Dept. of Industrial Engineering.

A STUDY OF THE EFFECTS OF ILLUMINATION AND NOISE ON SIMPLE MOTOR PERFORMANCE M.S. Thesis

Carol A. Gardinier 1971 32 p refs

(AD-739474) Avail: NTIS CSCL 05/10

The paper investigates the effects of two environmental parameters, illumination and noise, on human performance. While many single-factor studies have been made on both illumination and noise, relatively little research has been done to determine multi-factor environmental effects on performance. Studies of the combined effects of various environmental factors would be useful to both government and industry in the maintenance area, such as for obtaining accurate estimates for maintenance task times and repair times. In an organization as large as the Army, for example, this could result in a significant cost reduction. In this study, subjects performed a manual task under four conditions of illumination and noise. The results are reported.

GRA

N72-27096# Texas A&M Univ., College Station. Dept. of Industrial Engineering.

A DYNAMIC ANALYSIS OF THE ARM COMPLEX SUBJECTED TO AN EXTERNAL LOAD M.S. Thesis

John S. Bezner May 1971 72 p refs

(AD-739478) Avail: NTIS CSCL 06/2

The purpose of the paper is to investigate the action of the hand, arm, and shoulder complex when that complex is required to perform a definite task. The motion under study is that motion encountered when the human operator is required to turn a crank. The cranking motion is in a horizontal plane which passes through the shoulder joint. The subject is required to keep the arm in this plane of motion throughout the task performance. The moments and forces to which the arm mechanism is subjected are then analytically evaluated.

Author (GRA)

N72-27097# Texas A&M Univ., College Station. Dept. of Industrial Engineering.

THE EFFECTS OF COMBINED ENVIRONMENTAL FACTORS ON HUMAN PERFORMANCE OF A MANUAL TASK: NOISE AND TEMPERATURE M.S. Thesis

Robert P. Lewis May 1971 37 p refs Sponsored by the Army
(AD-739432) Avail: NTIS CSCL 05/10

The effects of two environmental factors, noise and temperature, upon human performance of a simple, well-learned manual dexterity task were examined. The experimental design

was a 2x2 factorial, using twelve subjects. The data obtained from scores on a Purdue Pegboard task were analyzed in a randomized block, by means of an analysis of variance. Results indicated that temperature had a significant effect on performance, while noise and the temperature x noise interaction did not.

Author (GRA)

N72-27098# Naval Air Development Center, Johnsville, Pa. Crew Systems Dept.

SOME EFFECTS OF CBRF3 INHALATION AND EPINEPHRINE CHALLENGE ON CERTAIN MYOCARDIAL METABOLITE LEVELS Interim Report

Richard A. Rhoden 30 Dec. 1971 61 p refs

(AD-739699; NADC-CS-7114) Avail: NTIS CSCL 06/20

Bromotrifluoromethane (CBRF3) would have considerable potential as a closed environment fire extinguishing agent, except for its membership in that large group of hydrocarbons capable of precipitating irregular heart action when inhaled by persons with elevated levels of blood epinephrine. These experiments were an effort to determine whether myocardial metabolism was impaired in male Wistar rats breathing 79/21 CBRF3/O2 and challenged with 1-epinephrine in what would ordinarily constitute sub-toxic dosages. CNS effects were the major observations in rats exposed to both CBRF3 and epinephrine; all control rats survived without apparent effect. The general picture was consistent with the CBRF3 induction of respiratory depression and hypoxia.

Author (GRA)

N72-27099 Office of Naval Research, Arlington, Va.

NAVAL RESEARCH REVIEWS, VOLUME 25, NO. 3

William J. Lescure, ed. Mar. 1972 33 p refs

Avail: SOD \$0.20

Developments in deep sea diving, and studies of lightning triggered by man are presented.

N72-27100 Office of Naval Research, Arlington, Va.

THE NAVY AND THE CHALLENGE OF DEEP DIVING

Carl O. Holmquist *In its Naval Res. Rev.*, Vol. 25, no. 2 Mar. 1972 p 1-14. Repr. from *Underwater Mag.*, v. 1, no. 3

The development of deep sea diving technology is reviewed. Topics discussed include: scuba, Sealab experiments, decompression sickness, inert gas narcosis, gas density and viscosity, body heat loss, hydrostatic pressure effects, fluid breathing, life support technology, and functional support of divers.

F.O.S.

N72-27102* National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

LIQUID WASTE FEED SYSTEM Patent

John B. Hall, Jr., Yi Tung, and Lavern E. Winn, inventors (to NASA) Issued 20 Jun. 1972 6 p Filed 15 Jan. 1970

(NASA-Case-LAR-10365-1; US-Patent-3,670,890;
US-Patent-Appl-SN-3151; US-Patent-Class-210-104;
US-Patent-Class-210-103; US-Patent-Class-210-110;
US-Patent-Class-210-137) Avail: US Patent Office CSCL 13B

A pressurized liquid waste tank feeds liquid waste into liquid waste processing equipment. The processed liquid is pumped into an accumulator tank which has an actuator that opens and closes microswitches as the accumulator tank is filled and emptied. These microswitches control solenoid valves which are located in the lines feeding the liquid waste processing equipment, the accumulator tank and the collecting tank. An electrical circuit ties together the switches and valves in a manner such that sufficient waste liquid is automatically maintained in the liquid waste processing equipment to give optimum system performance in a zero gravity environment.

Official Gazette of the U.S. Patent Office

N72-27103* Baylor Univ., Houston, Tex. Coll. of Medicine.
COMPRESSIBLE BIOMEDICAL ELECTRODE Patent.
 James D. Frost, Jr., inventor (to NASA) Issued 13 Jun. 1972
 5 p. Filed 5 Nov. 1970
 p 727) Sponsored by NASA
 (NASA-Case-MS-C-13648; US-Patent-3,669,110;
 US-Patent-Appl-SN-87222; US-Patent-Class-128-2.1E;
 US-Patent-Class-128-417; US-Patent-Class-128-DIG.4) Avail:
 US Patent Office CSCL 06B

An electrode is reported which incorporates a silicone rubber sponge immediately adjacent to a chlorided silver disk carried in a silicone rubber base. The electrode is covered with a thin leak-proof vinyl coating for storing electrolyte solution from the point of manufacture. The sponge rubber holds the electrolyte until it is required at the time of usage. A force on the exterior causes the electrolyte to moisten the skin to provide good ohmic contact with the subject.

Official Gazette of the U.S. Patent Office

N72-27104*# North American Rockwell Corp., Downey, Calif.
 Space Div.

A STUDY OF HUMAN PERFORMANCE IN A ROTATING ENVIRONMENT

J. A. Green, J. L. Peacock, and A. P. Holm [1971] 236 p refs
 (Contract NAS1-9711)
 (NASA-CR-111866; SD-70-456) Avail: NTIS HC \$14.00
 CSCL 05E

Consideration is given to the lack of sufficient data relative to the response of man to the attendant oculovestibular stimulations induced by multi-directional movement of an individual within the rotating environment to provide the required design criteria. This was done to determine the overall impact of artificial gravity simulations on potential design configurations and crew operational procedures. Gross locomotion and fine motor performance were evaluated. Results indicate that crew orientation, rotational rates, vehicle design configurations, and operational procedures may be used to reduce the severity of the adverse effects of the Coriolis and cross-coupled angular accelerations acting on masses moving within a rotating environment. Results further indicate that crew selection, motivation, and short-term exposures to the rotating environment may be important considerations for future crew indoctrination and training programs.

Author

N72-27105# Civil Aeromedical Inst., Oklahoma City, Okla.
METHODOLOGY IN THE MEASUREMENT OF COMPLEX HUMAN PERFORMANCE: TWO-DIMENSIONAL COMPENSATORY TRACKING

Alan E. Jennings, W. Dean Chiles, and Georgetta West May 1972 14 p refs
 (FAA-AM-72-21) Avail: NTIS HC \$3.00

Nineteen subjects were tested on two successive days on a complex performance device designed to measure functions of relevance to aircrew performance; included were measures of monitoring, information processing, pattern discrimination, and group problem solving. The effects of a perceptualmotor tracking task were evaluated by measuring performance with and without concurrent tracking during five different task combinations and in a tracking-alone condition. The tracking task was shown to be reliable both when performed by itself and when performed concurrently with other tasks. The tracking task was also shown to be sensitive to work load effects from the other tasks and to impose a significant effect on some of the other tasks. The findings also suggest that a composite score based on all concurrently performed tasks may have unique value and sensitivity under some conditions.

Author

N72-27106*# National Aeronautics and Space Administration.
 Ames Research Center, Moffett Field, Calif.
SECOND CONFERENCE ON PORTABLE LIFE SUPPORT SYSTEMS

Washington 1972 350 p refs Conf. held at Moffett Field, Calif., 11-13 May 1971
 (NASA-SP-302) Avail: NTIS HC \$6.00 CSCL 06K

Portable life support systems considered include breathing apparatus, oxygen generating and circulating equipment, thermoregulating diving suits, pressure suits and environmental control systems.

N72-27107* Bureau of Mines, Pittsburgh, Pa.
PORTABLE BREATHING APPARATUS FOR COAL MINES
 Robert W. VanDolah In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 1-4 refs

CSCL 06K

The state of the art in portable oxygen breathing equipment is reported. Considered are self-containing as well as chemically generating oxygen sources and their effectiveness and limitations in mine rescue operations.

G.G.

N72-27108* Naval Ship Systems Command, Washington, D.C.
DESIGN CONSIDERATIONS FOR DIVERS' BREATHING GAS SYSTEMS

O. R. Hansen In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 5-30 refs

CSCL 06K

Some of the design methods used to establish the gas storage, mixing, and transfer requirements for existing deep dive systems are discussed. Gas mixing systems appear essential to provide the low oxygen concentration mixtures within the converging tolerance range dictated by applications to increasing depths. Time related use of gas together with the performance of the gas transfer system insures a reasonable time frame for systems application.

Author

N72-27109* Hamilton Standard, Windsor Locks, Conn. Space Systems Dept.

APOLLO PLSS: ENVIRONMENTAL CONTROL OF THE SMALLEST MANNED SPACE VEHICLE

John C. Beggs and Fred H. Goodwin In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 31-48

CSCL 06K

The production of a portable life support system (PLSS) and associated backup equipment for supporting an astronaut working outside of the lunar module (LM) either in space or on the lunar surface is reported. Described are the system, the philosophy behind its design, basic requirements imposed on the system, and some of the evolutionary processes that led to the present configuration.

Author

N72-27110* National Aeronautics and Space Administration.
 Manned Spacecraft Center, Houston, Tex.

APOLLO PORTABLE LIFE SUPPORT SYSTEM PERFORMANCE REPORT

Maurice A. Carson In its Second Conf. on Portable Life Support Systems 1972 p 49-67 refs

CSCL 06K

The performance of the Apollo portable life support system (PLSS) on actual lunar missions is discussed. Both subjective comments by the crewmen and recorded telemetry data are evaluated although emphasis is on the telemetry data. Because the most important information yielded by the PLSS deals with determination of crewman metabolic rates, these data and their interpretation are explained in detail. System requirements are

compared with actual performance, and the effect of performance margins on mission planning are described. Mission preparation testing is described to demonstrate how the mission readiness of the PLSS and the crewmen is verified, and to show how the PLSS and the crewmen are calibrated for mission evaluation.

Author

N72-27111* Navy Clothing and Textile Research Unit, Natick, Mass.

NAVY-DEVELOPED LIFE SUPPORT SYSTEMS FOR FULLY ENCLOSED PROTECTIVE SUITS

G. M. Orner and N. F. Audet /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 69-80 refs
CSCL 06K

The development and performance of an environmental control unit capable of supporting a man in an impermeable suit at ambient temperatures up to 140 F for periods of up to two hrs is reported. The basic suit operation consists of cooling by wet ice contained in a suitcase. The system is designed to circulate and cool the air within the suit, to remove excess moisture and carbon dioxide, and to maintain a safe oxygen level.
G.G.

N72-27112* Westinghouse Electric Corp., Annapolis, Md. Ocean Research and Engineering Center.

A CHLORATE CANDLE/LITHIUM HYDROXIDE PERSONAL BREATHING APPARATUS

Frank E. Martin /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 81-99 refs

CSCL 06K

A portable coal mine rescue and survival equipment is reported that consists of a chlorate candle with a lithium hydroxide carbon-dioxide absorbent for oxygen generation, a breathing bag and tubing to conduct breathing to and from the man. A plastic hood incorporating a mouth piece for communication provides also eye protection and prevents inhalation through the nose. Manned testing of a prototype system demonstrated the feasibility of this closed circuit no-maintenance breathing apparatus that provides for good voice communication.
G.G.

N72-27113* Hamilton Standard, Windsor Locks, Conn.
ADVANCED EXTRAVEHICULAR PROTECTIVE SYSTEMS

James G. Sutton, Philip F. Heimlich, and Edward H. Tepper /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 101-137

CSCL 06K

New technologies are identified and recommended for developing a regenerative portable life support system that provides protection for extravehicular human activities during long duration missions on orbiting space stations, potential lunar bases, and possible Mars landings. Parametric subsystems analyses consider: thermal control, carbon dioxide control, oxygen supply, power supply, contaminant control, humidity control, prime movers, and automatic temperature control. G.G.

N72-27114* Vought Missiles and Space Co., Dallas, Tex.
REGENERABLE THERMAL CONTROL AND CARBON DIOXIDE CONTROL TECHNIQUES FOR USE IN ADVANCED EXTRAVEHICULAR PROTECTIVE SYSTEMS

J. L. Williams, R. J. Copeland, and B. W. Nebbon /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 139-157 refs

CSCL 06K

The most promising closed CO₂ control concept identified by this study is the solid pellet, Mg(OH)₂ system. Two promising approaches to closed thermal control were identified. The AHS system uses modular fusible heat sinks, with a contingency evaporative mode, to allow maximum EVA mobility. The AHS/refrigerator top-off subsystem requires an umbilical to minimize expendables, but less EVA time is used to operate the system, since there is no requirement to change modules. Both of these subsystems are thought to be practical solutions to the problem of providing closed heat rejection for an EVA system.

Author

N72-27115* Westinghouse Electric Corp., Annapolis, Md. Ocean Research and Engineering Center.

A PORTABLE LIFE SUPPORT SYSTEM FOR USE IN MINES

Sanford S. Zeller /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 159-166 refs

CSCL 06K

The portable life support system described in this paper represents a potential increase in the probability of survival for miners who are trapped underground by a fire or explosion. The habitability and life support capability of the prototype shelter have proved excellent. Development of survival chamber life support systems for wide use in coal mines is definitely within the capabilities of current technology.
Author

N72-27116* Battelle Memorial Inst., Columbus, Ohio.

SEMICLOSED-CIRCUIT ATMOSPHERE CONTROL IN A PORTABLE RECOMPRESSION CHAMBER

Peter S. Riegel and Don W. Caudy /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 167-182 refs.
(Contract N00014-70-C-0072)

CSCL 06K

A small portable recompression chamber is described that can be used both to treat a diver for decompression sickness or to transport him to a larger chamber complex. The device can be operated in either open circuit or semiclosed circuit atmospheres, permits two way conversation between patient and attendant, and uses an air injector for circulation of the chamber atmosphere.
G.G.

N72-27117* National Aeronautics and Space Administration. Manned Spacecraft Center, Houston, Tex.

SKYLAB ASTRONAUT LIFE SUPPORT ASSEMBLY

J. Travis Brown /In its Second Conf. on Portable Life Support Systems 1972 p 183-201
18-05)

CSCL 06K

A comparative study was performed to define an optimum portable life support system for suited operations inside and outside the Skylab Program. Emphasis was placed on utilization of qualified equipment, modified versions of qualified equipment, and new systems made up to state-of-the-art components. Outlined are the mission constraints, operational modes, and evaluation ground rules by which the Skylab portable life support system was selected and the resulting design.
Author

N72-27118* General Electric Co., Philadelphia, Pa.

ADVANCED DEEP SEA DIVING EQUIPMENT

William A. Danesi /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 203-216 ref

CSCL 06K

Design requirements are generated for a deep sea heavy

duty diving system to equip salvage divers with equipment and tools that permit work of the same quality and in times approaching that done on the surface. The system consists of a helmet, a recirculator for removing carbon dioxide, and the diver's dress. The diver controls the inlet flow by the recirculatory control valve and is able to change closed cycle operation to open cycle if malfunction occurs. Proper function of the scrubber in the recirculator minimizes temperature and humidity effects as it filters the returning air. G.G.

N72-27119* Navy Experimental Diving Unit, Washington, D.C.
OPERATION AND TESTING OF MARK 10 MOD 3 UNDERWATER BREATHING APPARATUS
William I. Milwee, Jr. *In* NASA. Ames Res. Center Second Conf. on Portable Life Support Systems

CSCL 06K

Performance tests on a closed circuit, mixed gas underwater breathing apparatus are reported. The equipment is designed to provide a minimum diving duration of four hours at 1500 ft below sea surface; it senses oxygen partial pressure in the breathing gas mix and controls oxygen content of the breathing gas within narrow limits about a preset value. The breathing circuit subsystem provides respirable gas to the diver and removes carbon dioxide and moisture from the expired gas. Test results indicate undesirable variations in oxygen partial pressure with oxygen addition and insufficient carbon dioxide absorption. G.G.

N72-27120* Navy Experimental Diving Unit, Washington, D.C.
THERMAL PROTECTION OF DIVERS
Patrick F. Dowland (Royal Navy) *In* NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 229-235 refs

CSCL 06K

Various diving suit-heating element combinations are evaluated in an effort to achieve a diving capability to depths of 1000 ft in water temperatures down to 29 F. Wet suits, dry suits and suits made of incompressible material are reported, and suit heat replacement by circulation of hot water with heating by cemented electrical elements is described. G.G.

N72-27121* National Aeronautics and Space Administration, Flight Research Center, Edwards, Calif.
A FLIGHT-RATED LIQUID-COOLED GARMENT FOR USE WITHIN A FULL-PRESSURE SUIT
Richard Carpenter and William R. Winter *In its* Second Conf. on Portable Life Support Systems refs

CSCL 06K

A flight rated liquid cooled garment system for use inside a full pressure suit has been designed, fabricated, and tested. High temperature tests with this system have indicated that heat is absorbed at a rate decreasing from 224 kg-cal/hr to 143 kg-cal/hr over a 40-min period. The first 30 min are very comfortable; thereafter a gradual heat load builds that results in mild sweating at the end of the 40-min period. In flight tests during hot weather when this cooling system was worn under a regulation flight suit, the pilot reported that temperatures were comfortable and that the garment prevented sweating. Author

N72-27122* TRW Systems Group, Redondo Beach, Calif.
POTENTIAL TECHNIQUES AND DEVELOPMENT ACTIVITIES IN DIVER SUIT HEATING
A. P. Shlosinger *In* NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 247-256 refs

CSCL 06K

A prototype compact reactor suitable for combustion of propane with oxygen under shallow as well as submerged deep submergence diving conditions is reported. The device is used to heat the circulating water in a water tube-type diving suit. G.G.

N72-27123* Mechanics Research, Inc., Los Angeles, Calif.
PORTABLE LIFE SUPPORT FOR INSTRUMENTATION OF AN OFFSHORE PLATFORM
Michael M. Mull and Clarkson L. Coffin *In* NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 257-264

CSCL 06K

A compressor was used to supply air through a nylon hose to the offshore platform field engineer working at the bottom of the piling. Air quality in the pile was sampled periodically for carbon dioxide, carbon monoxide, hydrogen sulfide, and combustible gases by an universal tester and an explosion meter. G.G.

N72-27124* Illinois Univ., Urbana. Dept. of Mechanical and Industrial Engineering.
REMOVAL OF METABOLIC HEAT FROM MAN WORKING IN A PROTECTIVE SUIT
Avraham Shitzer, John C. Chato, and Bruce A. Hertig *In* NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 265-281 refs

(Grant NGR-14-005-103)

CSCL 06K

A water cooled garment was constructed and used to study the characteristics of independent regional cooling of the body in contrast to the current practice of uniform cooling. The cooling pads in the garment were grouped to provide independent control of water inlet temperatures and flow rates to six regions: head, upper torso, lower torso, arms, thighs, and lower legs. Experiments with and without the cooling suit were conducted with five test subjects standing and walking on a treadmill on selected schedules. Steady state and, to a lesser extent, transient characteristics were obtained. Author

N72-27125* National Aeronautics and Space Administration, Ames Research Center, Moffett Field, Calif.
A LIQUID COOLED GARMENT TEMPERATURE CONTROLLER BASED ON SWEAT RATE
Alan B. Chambers and James Blackaby *In its* Second Conf. on Portable Life Support Systems 1972 p 283-287 refs

CSCL 06K

An automatic controller for liquid cooled space suits is reported that utilizes human sweat rate as the primary input signal. The controller is so designed that the coolant inlet temperature is inversely proportional to the subject's latent heat loss as evidenced by evaporative water loss. G.G.

N72-27126* National Aeronautics and Space Administration, Ames Research Center, Moffett Field, Calif.
EFFECT OF NECK WARMING AND COOLING ON THERMAL COMFORT
Bill A. Williams and Alan B. Chambers *In its* Second Conf. on Portable Life Support Systems 1972 p 289-294 refs

CSCL 06K

The potential use of local neck cooling in an area superficial to the cerebral arteries was evaluated by circulating cold or hot water through two copper disks held firmly against the neck. Subjective responses indicated that neck cooling improves the thermal comfort in a hot environment. G.G.

N72-27127* Safety in Mines Research Establishment, Sheffield /England/.

TOLERANCE TO EXTERNAL BREATHING RESISTANCE WITH PARTICULAR REFERENCE TO HIGH INSPIRATORY RESISTANCE

R. A. Bentley, O. G. Griffin, R. G. Love, D. C. F. Muir, and K. F. Sweetland /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 295-303 refs

CSSL 06K

The ability of men to exercise while breathing through graded inspiratory resistances was studied in order to define acceptable respiratory mouthpiece assembly standards. Experimental results with subjects wearing breathing masks and walking for 30 min on treadmills were used to calculate expiratory work rates. It is concluded that the airflow must be appropriate to the upper limit of minute ventilation likely to be encountered in the men wearing the apparatus. G.G.

N72-27128* Harvard Univ., Cambridge, Mass. School of Public Health.

RESPIRATORY PROTECTIVE DEVICE DESIGN USING CONTROL SYSTEM TECHNIQUES

William A. Burgess and Donald Yankovich (MIT) /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems p 305-314

CSSL 06K

The feasibility of a control system analysis approach to provide a design base for respiratory protective devices is considered. A system design approach requires that all functions and components of the system be mathematically identified in a model of the RPD. The mathematical notations describe the operation of the components as closely as possible. The individual component mathematical descriptions are then combined to describe the complete RPD. Finally, analysis of the mathematical notation by control system theory is used to derive compensating component values that force the system to operate in a stable and predictable manner. Author

N72-27129* International Business Machines Corp., Gaithersburg, Md. Federal Systems Div.

BREATHING METABOLIC SIMULATOR

R. G. Bartlett, C. M. Hendricks, and W. B. Morison /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 315-324 refs

CSSL 06K

The development of a breathing metabolic simulator (BMS) is reported. This BMS simulates all of the breathing and metabolic parameters required for complete evaluation and test of life support and resuscitation equipment. It is also useful for calibrating and validating mechanical and gaseous pulmonary function test procedures. Breathing rate, breathing depth, breath velocity contour, oxygen uptake, and carbon dioxide release are all variable over wide ranges simulating conditions from sleep to hard work with respiratory exchange ratios covering the range from hypoventilation. In addition, all of these parameters are remotely controllable to facilitate use of the device in hostile or remote environments. The exhaled breath is also maintained at body temperature and a high humidity. The simulation is accurate to the extent of having a variable functional residual capacity independent of other parameters. Author

N72-27130* Safety in Mines Research Establishment, Sheffield /England/.

INFLUENCE OF FACEMASK DESIGN ON OPERATIONAL PERFORMANCE

O. G. Griffin and D. J. Longson /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972

p 325-333 refs

CSSL 06K

Spirometric measurements of oxygen volume and determination of the amount of argon in exhaled breath are used to analyze facemask design efficiency during treadmill walking tests with subjects carrying plastic hoods filled with argon. Facemask leakage measurements established the better performance of a pneumatic seal type mask in comparison with plain seal type masks. Author

N72-27131* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

CATALYZED SODIUM CHLORATE CANDLES

C. W. Malich and T. Wydeven /In its Second Conf. on Portable Life Support Systems 1972 p 335-345 refs

CSSL 06K

The catalytic effect of cobalt powder on chlorate decomposition has been confirmed. Catalysis is enhanced by oxidation of the metal during burning. Catalysts other than cobalt compounds should also be effective; the complete elimination of fuel has shown that the oxidation of cobalt during decomposition is not a vital factor in the improved performance of catalyzed candles. Author

N72-27132* Mechanics Research, Inc., Los Angeles, Calif.

AN EMERGENCY SURVIVAL SUIT

Daniel L. Curtis /In NASA. Ames Res. Center Second Conf. on Portable Life Support Systems 1972 p 347-350

CSSL 06K

A thermally insulative inflatable garment designed specifically as a lightweight low storage volume emergency suit for subzero weather survival is reported. Testing confirms that the inflatable suit design satisfies the objectives for a subject standing at rest with environmental temperatures down to -450 F if the garment is inflated with Freon. G.G.

N72-27133* National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.

AN ALTITUDE CHAMBER RESCUE ENSEMBLE

Russell P. Lloyd /In its Second Conf. on Portable Life Support Systems 1972 p 351-358

CSSL 06K

Altitude chamber tests accomplished with the astronaut crews in the spacecraft at a simulated altitude of above 200,000 ft requires that a rescue team be provided in the event of an accident in the spacecraft. The rescue crew is stationed in an airlock maintained at an altitude of 18,000 ft. A protective ensemble provides the rescue crew with life support capabilities, communications, and protection in the event of an emergency. In the event of an emergency, repressurization of the chamber is initiated; as the chamber descends, the airlock ascends and the two meet at 25,000 ft. This phase of the emergency repressurization takes less than 30 sec. Author

N72-27134# National Research Council of Canada, Ottawa (Ontario).

MULTICHANNEL BIOELECTRIC CONTROL OF THE MOVEMENTS OF HUMANS IN NORMAL AND PATHOLOGICAL CONDITIONS

L. S. Aleev and S. G. Bunimovich 1972 10 p refs Transl. into ENGLISH from Proc. of Congr. of the German Cybernetics Soc., Munich, 23-26 Apr. 1968 (NRC-TT-1552) Avail: NTIS HC \$3.00

A bioelectric control system, the myolon, simulating certain human neuromuscular motions was developed and tested. The system is based on the multichannel principle utilizing the laws governing the change of mean value of the summary neuromyogram. The control system is designed to record the motion algorithms on a magnetic storage device, derive control signals from the storage device, and derive control signals directly from the donor. The use of the device in training athletes and treating motor function disturbances is discussed. E.H.W.

N72-27135# Technology Service Corp., Santa Monica, Calif.
STRUCTURAL LANGUAGES AND BIOMEDICAL SIGNAL ANALYSIS USING INTERACTIVE GRAPHICS
 W. S. Meisel and D. C. Collins Mar. 1972 9 p refs Presented at Biomed. Symp., San Diego, Calif., 2-4 Feb. 1972 (Contract F44620-71-C-0093; AF Proj. 9749) (AD-739258; AFOSR-72-0616TR) Avail: NTIS CSCL 06/2

The analysis of biological waveforms by computer or by special-purpose hardware can reduce the burden on trained medical manpower, make mass screening of a population more tenable, and allows the automatic analysis of large quantities of research data. Waveforms generated in electrocardiography, phonocardiography, vectorcardiography, cardiac output recording, oxygen consumption recording, electroencephalography, electromyography, and in similar applications are candidates for analysis. A characteristic of many biomedical waveforms in such applications is that many of the features by which classes of waveforms, e.g., abnormal vs. normal EKG's, are distinguished, are generally expressed by fuzzy descriptions of structural details. In EKG analysis, one hears reference to, for example: a depressed S-T segment; an inverted T wave; increased duration of the QRS interval; late onset of the intrinsicoid deflection. It is the intent of this paper to describe a generalized approach to obtaining a quantitative measure of the degree of existence of such a characteristic in a given waveform. Such measures have a clear interpretation and can be used in a heuristic or linguistic program. They are continuous by continuously measured features which can be used alone or in combination with more abstract features in statistical pattern recognition algorithms.

Author (GRA)

N72-27136# Texas A&M Univ., College Station. Dept. of Industrial Engineering.
TECHNIQUES FOR MEASUREMENT OF CENTERS OF GRAVITY M.S. Thesis
 Raymond Paul Rhode May 1971 54 p refs Sponsored by Army (AD-739439) Avail: NTIS CSCL 05/5

A device which would measure and record the position of the projection of the center of gravity in the horizontal plane is proposed. A generalized design of such a device is presented. The proposed system uses strain gage rings as sensing elements and either an analog computer or an analog to digital converter as a recording element. An additional device which would allow the calculation of centers of gravity from a series of three static measurements is also presented. Author (GRA)

N72-27137# Texas A&M Univ., College Station. Dept. of Industrial Engineering.
PSYCHOPHYSIOLOGICAL MEASUREMENTS APPLIED TO MAINTAINABILITY EVALUATION OF EQUIPMENT DESIGN M.S. Thesis
 Billy R. Schulze May 1971 50 p refs Sponsored by Army (AD-739437) Avail: NTIS CSCL 05/5

The paper presents a proposal for using psychophysiological measurements to aid in evaluating equipment designs from the human factors engineering viewpoint. As a preliminary step in examining the feasibility of applying this method, an experiment was conducted to determine if man's reaction to task difficulty

as affected by equipment design features is reflected in psychophysiological indices. Subjects were presented with two similar maintenance type tasks to be performed on differently designed pieces of equipment. One task involved equipment which obviously facilitated ease of maintenance. The other task involved equipment which is difficult to maintain. Various psychophysiological measurements were taken of the subjects as these presentations were made. It was found that a majority of the measured indices were higher during the hard task than during the easy task. However, these differences were not significant at the significance level selected for use in the statistical analysis. Author (GRA)

N72-27138# Applied Psychological Services, Wayne, Pa. Science Center.

MODIFICATION OF THE SIEGEL-WOLF OPERATOR SIMULATOR MODEL FOR ON-LINE EXPERIMENTATION Final Report, Jun. 1968 - Sep. 1969

Arthur I. Siegel, J. Jay Wolf, M. A. Fischl, William Miehle, and Gerald P. Chubb Jun. 1971 117 p refs (Contract F33615-68-C-1647; AF Proj. 7184) (AD-737798; AMRL-TR-71-80) Avail: NTIS CSCL 05/10

The primary effort was to modify the existing Siegel-Wolf operator simulation model to allow dynamic interaction with an experimental subject performing on-line in some sort of pseudoreal time environment. The Siegel-Wolf model is capable of simulating task performance by a one or two-man crew to determine the impact human factors have on systems effectiveness and mission success. The BUIC III (Back Up Interceptor Control System for SAGE) active tracking task was used in this work as a representative environment. The other three phases of the effort dealt with the conceptual aspects of the model. Variables known to contribute to performance, but which were not incorporated into the model, were considered to determine their possible contribution to enhancing the model's predictive validity.

Author (GRA)

N72-27139# Texas A&M Univ., College Station. Dept. of Industrial Engineering.

INVESTIGATION OF STIMULUS-SIGNAL AMPLITUDE AND FREQUENCY VARIATION IN VIBROTACTILE COMMUNICATION M.S. Thesis

Charles E. Slyker May 1971 62 p refs Sponsored by Army (AD-739433) Avail: NTIS CSCL 05/5

An electromechanical transducer was modified for use as a vibrotactile stimulus. Response time to the vibrotactile stimulus was measured experimentally at various levels of stimulus-signal amplitude and frequency. Stimulus-signal amplitude levels ranged from 0.1 to 1.6 mm and frequency levels ranged from 30 to 800 Hz. Experimental results indicate that response time to the vibrotactile stimulus quickens with increasing amplitude and frequency and further that response time appears to be converging to an optimum over the range tested. Author (GRA)

N72-27140# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

SYMPOSIUM ON BIODYNAMIC MODELS AND THEIR APPLICATIONS

Dec. 1971 965 p refs Symp. held at Dayton, Ohio, 26-28 Oct. 1970

(AD-739501; AMRL-TR-71-29) Avail: NTIS CSCL 06/2

The Symposium on Biodynamics Models and Their Applications took place in Dayton, Ohio, on 26-28 October 1970 under the sponsorship of the National Academy of Sciences - National Research Council, Committee on Hearing, Bioacoustics, and Biomechanics; the National Aeronautics and Space Administration; and the Aerospace Medical Research Laboratory, Aerospace Medical Division, United States Air Force. Most technical areas discussed included application of biodynamic

models for the establishment of environmental exposure limits, models for interpretation of animal, dummy, and operational experiments, mechanical characterization of living tissue and isolated organs, models to describe man's response to impact, blast, and acoustic energy, and performance in biodynamic environments. Author (GRA)

N72-27882 Joint Publications Research Service, Arlington, Va.
FOR A RENDEZVOUS IN ORBIT

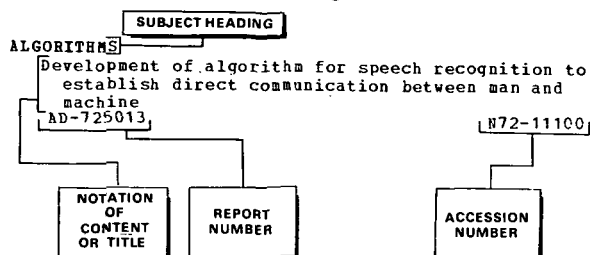
E. Anisimov *In its Docking Training and Telemetry* 11 Jul. 1972 p 1-7

The use of specialized and multipurpose simulators is discussed in connection with developing the skill of cosmonauts in spacecraft docking. Author

Subject Index

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 107) OCTOBER 1972

Typical Subject Index Listing



The Notation of Content (NOC), rather than the title of the document, is usually used to provide a more exact description of the subject matter. (In some cases AIAA uses the title in lieu of an NOC.) The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIOTHESES

Chemical evolution and the origin of life -
Bibliography supplement 1970.

A72-36450

ACCELERATION (PHYSICS)

Construction of animal centrifuge, and relationship between discriminability of g differences and location along effective weight continuum
[NASA-CR-127067]

N72-26043

Comparing effects of positive Gy acceleration on cardiovascular and respiratory functions in dogs under normal respiration in air, and when totally immersed in oxygenated fluorocarbon
[NASA-CR-127262]

N72-27078

ACCELERATION STRESSES (PHYSIOLOGY)

Russian book - Intracranial blood circulation under conditions of accelerations and weightlessness

A72-35460

Synchronous and asynchronous BASH/body acceleration synchronous with heart beat/ effects on hemodynamics and ventilation in dogs and humans

A72-36033

ACCELERATION TOLERANCE

Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival times

A72-36448

Physical models for visual - vestibular interactions in simulating human nystagmic eye movements
[AD-737795]

N72-27090

Vestibular-ocular counterroll reflex for determining vestibular response dynamics of monkeys to acceleration
[AD-737828]

N72-27094

ACCURACY

Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure

A72-37220

ACID BASE EQUILIBRIUM

Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes.

A72-34983

Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status.

Algorithms for selected blood acid-base and blood gas calculations.

A72-35166

A72-35973

ACTIVATION ENERGY

Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival times

A72-36448

ACTIVITY (BIOLOGY)

A note on the biological activity of the noble gas compound xenon trioxide.

A72-36444

ACTIVITY CYCLES (BIOLOGY)

Relaxation phenomena in the biological carbon cycle under conditions of variable atmospheric CO₂-content.

A72-34897

ADAPTATION

Stress and adaptation responses to repeated acute acceleration.

A72-34729

New experimental data on the morpho-physiological analysis of the adaptation phenomenon in the somatic reflex arch

A72-35023

ADENOSINE TRIPHOSPHATE (ATP)

The influence of exogenous ATP on cardiac metabolism in acute hypoxia.

A72-34987

ADRENAL METABOLISM

Hemodynamic thermoregulatory and sympathoadrenal responses to heat acclimatization in man during supine and upright position exercise

A72-35963

ADRENERGICS

Pharmacological effects on the central adrenergic regulation mechanisms of blood circulation

A72-35019

AEROSPACE ENVIRONMENTS

Apparatus for programmed oral administration of drugs to large primates in altered environments.

A72-36921

Experimental investigation of an astronaut maneuvering scheme.

A72-37026

AEROSPACE MEDICINE

Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas.

A72-34434

Annotated bibliography and index on Aerospace Medicine and Biology - April 1972

N72-26042

Annotated bibliography and indexes on Aerospace Medicine and Biology - May 1972

N72-27076

Noise environment of C-7A during ground and airborne operation
[AD-738627]

N72-27086

APPARENT NERVOUS SYSTEMS

Neuroinhibition in the regulation of emesis.

A72-36449

AFTERIMAGES

Eye movement pattern monitoring to investigate retinal afterimage role in release of pursuit movements

A72-34886

Manipulation of projected afterimages by means of the physiological theory imposed on the observer.

A72-36920

AGE FACTOR

Work capacity and physiological responses to maximum exercise in 54 year old men in relation

AGING (BIOLOGY)

- to heart disease and cardiovascular hazard studies
A72-35822
- Developmental relationships between field
independence and fixity-mobility.
A72-36906
- Assessment of life span age difference relations
in visual perceptual tasks, taking into account
maturational and generational differences
A72-36910
- Effect of set size, age, and mode of stimulus
presentation on information-processing speed.
A72-36922

AGING (BIOLOGY)

- Changes of the mitral echocardiogram with ageing
and the influence of atherosclerotic risk factors.
A72-37031

AGRICULTURE

- Lunar horticulture possible role as life support
system of earth independent lunar colony
A72-35938
- Research in agriculture, computers and
cybernetics, medicine, and electronics
[JPRS-56202] N72-26061

AIR LOCKS

- Portable air supply and monitoring system for
personnel working on offshore platform piling
N72-27123

AIRCRAFT ACCIDENT INVESTIGATION

- Aircraft accident in the Faroe Islands in 1970 -
Observations from a medical point of view, with
special reference to spinal fractures.
A72-34556
- Grouping of the causative factors in investigation
of aircraft accidents attributed to pilot errors.
A72-34557

AIRCRAFT CONTROL

- Performance of human model in controlling
attacking fighter aircraft
N72-26077

AIRCRAFT NOISE

- Social survey of annoyance caused by aircraft and
road traffic noise
[TT-7204] N72-26082
- Noise environment of C-7A during ground and
airborne operation
[AD-738627] N72-27086

AIRCRAFT PILOTS

- Effects of high intensity anticollision light
pulses on physiological responses of instrument
rated pilots and non-pilots
[FAA-AM-72-8] N72-26072
- Cholinesterase methods for assaying pesticide
poisoning in blood of aerial-appligator personnel
[FAA-AM-72-12] N72-27080

ALGORITHMS

- Algorithms for selected blood acid-base and blood
gas calculations.
A72-35973

ALPHA PARTICLES

- The influence of molecular binding on the stopping
power of alpha particles in hydrocarbons.
A72-37193

ALTITUDE ACCLIMATIZATION

- Ventilatory peripheral chemoreflex response to
hypoxia during physical exercise in native
highlanders and altitude-acclimated lowlanders
A72-34345
- Thyroidal influence on myocardial changes induced
by simulated high altitude.
A72-34730
- Myocardial metabolic changes in chronic hypoxia.
A72-34989
- Role of the synthesis of nucleic acids and
proteins in the adaptation of the organism to
altitude hypoxia.
A72-34990
- Cardiac performance and the coronary circulation
of man in chronic hypoxia.
A72-34992
- Pulmonary gas exchange in Andean natives at high
altitude.
A72-36570

ALTITUDE TESTS

- Life support system for rescue crew in altitude
chamber tests
N72-27133

ALVEOLAR AIR

- Rebreathing studies of carbon dioxide pressure
level effect on carbon dioxide content

SUBJECT INDEX

- difference in arterial blood and alveolar gas
during exercise and rest
A72-34346
- Respiratory frequency and alveolar oxygen and
carbon dioxide tension relationship to
hypercapnia in man
A72-35965
- Blood oxygenating ability of helium- and
argon-oxygen environments relative to air, using
alveolar gas equation to predict arterial oxygen
pressure
A72-36438
- A model of fluctuating alveolar gas exchange
during the respiratory cycle.
A72-36571
- ALVEOLI**
Cell proliferation in lungs of mice exposed to
elevated concentrations of oxygen.
A72-34548
- AMINO ACIDS**
The uptake, metabolism and release of
C¹⁴-taurine by rat retina in vitro.
A72-34881
- Gas dynamics and chemistry of lightning-produced
shock waves /thunder/ in postulated primordial
reducing atmosphere, noting amino acid production
A72-36443
- ANALYZERS**
Automated, six channel, discrete sample
electrolyte analyzer, using peristaltic pump
[AD-737568] N72-27091
- ANIMALS**
Construction of animal centrifuge, and
relationship between discriminability of g
differences and location along effective weight
continuum
[NASA-CR-127067] N72-26043
- ANOXIA**
Thyroidal influence on myocardial changes induced
by simulated high altitude.
A72-34730
- Acute myocardial anoxia - Anatomical changes and
their possible relation to immunological
processes.
A72-34981
- Anoxic tolerance of the heart muscle in different
types of chronic hypoxia.
A72-34991
- ANTARCTIC REGIONS**
Medical aspects of human cold acclimatization
during stay in polar regions
[JPRS-56225] N72-26062
- Human physiological reactions and pathology in
Antarctic acclimatization
N72-26063
- Clinical evaluation of human physiological
acclimatization processes in Antarctica
N72-26064
- Physiological characteristics of human cold
acclimatization in Antarctica
N72-26065
- Psychophysiological factors of human adaptation to
Antarctic life
N72-26066
- Sleep patterns of human adaptation to Antarctic life
N72-26067
- Polar light regime effects on human blood system
during Antarctic life
N72-26068
- Oxygen saturation of human blood during prolonged
stay in Antarctic region
N72-26069
- Spirographic examination of human pulmonary
functions during stay in Antarctica
N72-26070
- ANXIETY**
Effects of instructions on measures of state and
trait anxiety in flight students.
A72-34464
- APOLLO 14 FLIGHT**
Analysis of vegetable seedlings grown in contact
with Apollo 14 lunar surface fines.
A72-35925
- ARCTIC REGIONS**
Physiological evaluation of thermal insulation
properties of camel hair suits for human Arctic
stay
N72-26071

ARM (ANATOMY)

Analysis of arm performance subjected to external load during crank turning task
[AD-739478] A72-27096

ARRHYTHMIA

Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction. A72-34997

ARTERIES

Rebreathing studies of carbon dioxide pressure level effect on carbon dioxide content difference in arterial blood and alveolar gas during exercise and rest A72-34346

Blood oxygenating ability of helium- and argon-oxygen environments relative to air, using alveolar gas equation to predict arterial oxygen pressure A72-36438

Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. A72-37028

ARTERIOSCLEROSIS

Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion A72-37030
Changes of the mitral echocardiogram with ageing and the influence of atherosclerotic risk factors. A72-37031

ARTIFICIAL GRAVITY

Habitability factors in a rotating space station. A72-36436
Gravity simulation by rotation and effects on human performance [NASA-CR-111866] A72-27104

ARTIFICIAL HEART VALVES

Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation. A72-34221

ASTRONAUT LOCOMOTION

Experimental investigation of an astronaut maneuvering scheme. A72-37026

ASTRONAUT MANEUVERING EQUIPMENT

Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas. A72-34434

ASTRONAUT TRAINING

Some aspects of survival and rescue of astronauts in polar regions. A72-34435
Training of cosmonauts for prolonged space flight [JPRS-56181] A72-26081

ASTRONAUTS

Portable life support system for astronaut working outside of lunar module A72-27109

ATMOSPHERIC CHEMISTRY

Gas dynamics and chemistry of lightning-produced shock waves /thunder/ in postulated primordial reducing atmosphere, noting amino acid production A72-36443

ATMOSPHERIC COMPOSITION

Relaxation phenomena in the biological carbon cycle under conditions of variable atmospheric CO₂-content. A72-34897

ATTACKING (ASSAULTING)

Performance of human model in controlling attacking fighter aircraft A72-26077

ATTENTION

Experimental tests of Voth-Mayman hypothesis of autokinesia mediation by attention distribution mechanism A72-36904

Repression-sensitization and duration of visual attention. A72-36917

ATTRACTION

Psychological tests to judge maximum and minimum nonphysical subjective attraction forces between two parallel bars A72-36919

AUDITORY DEFECTS

Human eardrum rupture and hearing loss injuries from nuclear explosions [AD-737643] A72-27092

AUDITORY SIGNALS

Pilot performance and reaction time in response to auditory signals during low level helicopter flight [ISVR-TR-54] A72-26086

AUDITORY STIMULI

Human operator errors in performing audio-video and audio only tracking tasks A72-26078

AUTOKINESIS

Experimental tests of Voth-Mayman hypothesis of autokinesia mediation by attention distribution mechanism A72-36904

AUTOMATIC CONTROL

Behavior of man in technical, and socioeconomic control systems A72-26194

AUTOMATIC GAIN CONTROL

Gain control and contrast sensitivity in the vertebrate retina. A72-34418

AUTOMATIC TEST EQUIPMENT

Considerations in the design of an automatic visual field tester. A72-37013

AUTONOMIC NERVOUS SYSTEM

Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed. A72-36572

AVIONICS

Recent research applicable to the design of electronic displays. A72-36902

B**BACILLUS**

The effects of various cure cycles upon the viability of *Bacillus subtilis* var. *niger* spores within solid propellant. A72-36437

BACK INJURIES

Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with special reference to spinal fractures. A72-34556

BACKGROUND RADIATION

Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination. A72-34879

BACKSCATTERING

Effects of high intensity anticollision light pulses on physiological responses of instrument rated pilots and non-pilots [FAA-AH-72-8] A72-26072

BACTERIOLOGY

Lipid composition of growing and starving cells of *Arthrobacter crystallopoietes*. A72-35835

BALLISTOCARDIOGRAPHY

Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971. A72-36032

Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients. A72-36034

Mathematical models for flow ejection and aorta pressures based on displacement ballistocardiography and time dependent incompressible flow theories respectively A72-36035

Some preliminary observations on the correlation of the high frequency /acceleration/ direct-body ballistocardiogram with the apex cardiogram, carotid pulse and their derivatives. A72-36036

Computerized simulation of ballistocardiograph subjective evaluation and objective manual measurements, correlating heart beat with ideal pattern A72-36937

- Digital computer technique for ballistocardiography simulation, using distributed parameters for vessel segments in circulatory system model
A72-36038
- Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure
A72-36039
- BED REST**
Disproportional changes in hematocrit, plasma volume, and proteins during exercise and bed rest.
A72-35966
- BETA PARTICLES**
Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds.
A72-37195
- BIBLIOGRAPHIES**
Chemical evolution and the origin of life - Bibliography supplement 1970.
A72-36450
- Annotated bibliography and index on Aerospace Medicine and Biology - April 1972 [NASA-SP-7011(101)]
N72-26042
- Planetary quarantine bibliography [NASA-CR-127112]
N72-26074
- Annotated bibliography and indexes on Aerospace Medicine and Biology - May 1972 [NASA-SP-7011(102)]
N72-27076
- Bibliography of simulation models for vegetation [NASA-CR-127426]
N72-27082
- BINOULAR VISION**
Visual depth perception response functions for sine and square wave modulated binocular parallax
A72-34293
- Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination.
A72-34879
- REM period functional maintenance of coordinated eye movement facilitation and binocular depth perception accuracy following sleep
A72-35462
- The tracking of targets located outside of Panum's area.
A72-35916
- Quantitative decision criteria for identification of visual evoked responses obtained during binocular rivalry.
A72-36312
- Vergence eye movements to pairs of disparity stimuli with shape selection cues.
A72-36612
- BIOASSAY**
A note on the biological activity of the noble gas compound xenon trioxide.
A72-36444
- Microbial analysis of television camera retrieved from Surveyor 3 spacecraft
N72-26768
- Microbiological assay of electric wire bundle from Surveyor 3 spacecraft
N72-26769
- Cholinesterase methods for assaying pesticide poisoning in blood of aerial applicator personnel [FAA-AH-72-12]
N72-27080
- BIOCHEMISTRY**
The uptake, metabolism and release of C/14/-taurine by rat retina in vitro.
A72-34881
- Chemical evolution and the origin of life - Bibliography supplement 1970.
A72-36450
- BIOCONTROL SYSTEMS**
Russian book - Mechanisms regulating physiological functions
A72-35014
- Pharmacological effects on the central adrenergic regulation mechanisms of blood circulation
A72-35019
- Biomembrane hydration mechanism of Na-K ion pump of living cell based on fractionation at air-sea interface
A72-36441
- Neuroinhibition in the regulation of emesis.
A72-36449
- Servo action in human voluntary movement.
A72-36999
- A human left ventricular control system model for cardiac diagnosis.
A72-37029
- Multichannel bioelectric control system for simulating neuromuscular movements and treating motor function disturbances [NRC-TT-1552]
N72-27134
- BIODYNAMICS**
Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure
A72-36039
- Experimental investigation of an astronaut maneuvering scheme.
A72-37026
- Analysis of arm performance subjected to external load during crank turning task [AD-739478]
N72-27096
- Hearing, bioacoustics, and biomechanics for biodynamic models - conference [AD-739501]
N72-27140
- BIOELECTRICITY**
Bioelectric activity of the medulla oblongata during hypothermia and bloodletting
A72-35024
- Bioelectric system for control of muscular activity [NRC-TT-1551]
N72-27083
- Multichannel bioelectric control system for simulating neuromuscular movements and treating motor function disturbances [NRC-TT-1552]
N72-27134
- BIOENGINEERING**
Apparatus for programmed oral administration of drugs to large primates in altered environments.
A72-36921
- BIOINSTRUMENTATION**
Considerations in the design of an automatic visual field tester.
A72-37013
- Heart rate monitor for indicating physical fitness level in individuals [AD-738882]
N72-26088
- BIOLOGICAL EFFECTS**
Visible and invisible nonionizing radiation produced human injuries, considering visual and retinal effects and induced thermal stresses
A72-34300
- Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism
A72-35003
- Effects of magnetic fields on microorganisms
A72-35004
- Mechanism of the biological action of a constant magnetic field
A72-35005
- Influence of a magnetic field on radiation-induced chromosome aberrations in plants
A72-35007
- Pathologic-anatomic characterization of changes induced by magnetic fields in experimental animals
A72-35008
- Clinical hygienic and experimental data on magnetic field effects under working conditions
A72-35012
- Methodical and methodological characteristics of a magneto-biological experiment
A72-35013
- Effect of lunar ground on radiation damage in mice
A72-35214
- Space flight effects on chlorella cell survival and mutability in Zond automatic stations
A72-35278
- Soyuz 5 satellite vehicle space flight factors effect on chlorella cells, investigating survival rates and mutability
A72-35279
- Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment
A72-35280
- Analysis of vegetable seedlings grown in contact with Apollo 14 lunar surface fines.
A72-35925
- The influence of clinostat rotation on the fertilized amphibian egg.
A72-36435

- Annotated bibliography and index on Aerospace Medicine and Biology - April 1972 [NASA-SP-7011(101)] N72-26042
- Biological effects of UHF electromagnetic radar emissions on human organisms N72-26053
- Biological effects of material transmitted shock waves on miniature pigs [DLR-FB-72-13] N72-26059
- Annotated bibliography and indexes on Aerospace Medicine and Biology - May 1972 [NASA-SP-7011(102)] N72-27076
- BIOLOGY**
- Biological resources of Chesapeake Bay and measurement of chemical, physical, and meteorological features to improve resources management N72-26278
- BIOMEDICAL DATA**
- Biomedical data reports on human acclimatization to polar regions and psychophysiology [JPRS-56252] N72-26060
- BIOMETRICS**
- Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. A72-34298
- Reproducibility of indirect /CO2/ Fick method for calculation of cardiac output. A72-35971
- Quantitative decision criteria for identification of visual evoked responses obtained during binocular rivalry. A72-36312
- Compressible electrolyte saturated sponge electrode for biomedical applications [NASA-CASE-MSC-13648] N72-27103
- BIOMICS**
- Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade. A72-34445
- A new model for estimating space proton dose to body organs. A72-35354
- Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system A72-35972
- Digital computer technique for ballistocardiography simulation, using distributed parameters for vessel segments in circulatory system model A72-36038
- Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure A72-36039
- A stochastic bioburden model for spacecraft sterilization. A72-36442
- A model of fluctuating alveolar gas exchange during the respiratory cycle. A72-36571
- Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity A72-36611
- Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. A72-37028
- A human left ventricular control system model for cardiac diagnosis. A72-37029
- Biological models for clinical analysis of pulmonary circulation during simulated abnormal pathological or environmental conditions [NASA-CR-127111] N72-26044
- Performance of human model in controlling attacking fighter aircraft N72-26077
- BIOPHYSICS**
- Microwave radiation - Biophysical considerations and standards criteria. A72-34299
- Russian book - Effect of magnetic fields on biological objects
- Physical phenomena occurring in living objects under the action of constant magnetic fields A72-35001
- Methodical and methodological characteristics of a magneto-biological experiment A72-35002
- Conferences on biophysical approaches to solving problems of ionizing and nonionizing radiation effects during high altitude flight, manned space flight, and ground based equipment [AGARD-CP-95-PT-3] N72-26045
- BIOSYNTHESIS**
- The effects of acute hypoxia on lipid synthesis in the rat heart. A72-34979
- Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- Role of the synthesis of nucleic acids and proteins in the adaptation of the organism to altitude hypoxia. A72-34990
- Inhibitory effects of glucose on biosynthetic respiratory adaptation of protoheme by yeast [NASA-TT-F-14330] N72-26073
- BLEEDING**
- Bioelectric activity of the medulla oblongata during hypothermia and bloodletting A72-35024
- BLOOD**
- Rebreathing studies of carbon dioxide pressure level effect on carbon dioxide content difference in arterial blood and alveolar gas during exercise and rest A72-34346
- Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status. A72-35166
- Polar light regime effects on human blood system during Antarctic life N72-26068
- Oxygen saturation of human blood during prolonged stay in Antarctic region N72-26069
- BLOOD CIRCULATION**
- Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade. A72-34445
- Pharmacological effects on the central adrenergic regulation mechanisms of blood circulation A72-35019
- Russian book - Intracranial blood circulation under conditions of accelerations and weightlessness A72-35460
- Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs A72-35917
- Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971. A72-36032
- BLOOD COAGULATION**
- Blood coagulation changes at high altitude predisposing to pulmonary hypertension. A72-34222
- BLOOD FLOW**
- Increase in skeletal muscle performance during emotional stress in man. A72-34942
- Mathematical models for flow ejection and aorta pressures based on displacement ballistocardiography and time dependent incompressible flow theories respectively A72-36035
- BLOOD PLASMA**
- Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids. A72-34553
- Disproportional changes in hematocrit, plasma volume, and proteins during exercise and bed rest. A72-35966
- Algorithms for selected blood acid-base and blood gas calculations.

BLOOD PRESSURE

SUBJECT INDEX

- Fluid transfer between blood and tissues during exercise. A72-35973
- Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion A72-36560
- BLOOD PRESSURE A72-37030
- Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. A72-34298
- Hemodynamic changes in man during immersion with the head above water. A72-34543
- Mathematical models for flow ejection and aorta pressures based on displacement ballistocardiography and time dependent incompressible flow theories respectively A72-36035
- Effects of vagotomy and increased blood pressure on the incidence of decompression-induced pulmonary hemorrhage. A72-36446
- Automated constant cuff pressure system to remotely determine average systolic and diastolic blood pressure in man [AD-738832] N72-26089
- BLOOD VESSELS
- Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system A72-35972
- Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients. A72-36034
- BODY FLUIDS
- Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs A72-35917
- Algorithms for selected blood acid-base and blood gas calculations. A72-35973
- Fluid transfer between blood and tissues during exercise. A72-36560
- BODY KINEMATICS
- Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure A72-36039
- Servo action in human voluntary movement. A72-36999
- Experimental investigation of an astronaut maneuvering scheme. A72-37026
- BODY SWAY TEST
- Effects of visual cues on the standing body sway of males and females. A72-36918
- Otolith organ response of normal vision people and persons with severe bilateral labyrinthine function loss exposed to prolonged tilt [NASA-CR-127034] N72-26058
- BODY TEMPERATURE
- Heat, noise and vibration stress combined effects on skin and rectal temperature, heart rate, weight loss and biochemical urinalysis A72-34551
- Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air. A72-34728
- Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution A72-37196
- BODY WEIGHT
- Heat, noise and vibration stress combined effects on skin and rectal temperature, heart rate, weight loss and biochemical urinalysis A72-34551
- Body weight decreases in some proton exposed primates. A72-36447

- BONES
- Comparative study of two direct methods of bone mineral measurement. A72-34552
- BORESIGHTS
- Ophthalmologic examinations for determining retina damage caused by helium-neon laser boresights [AD-738629] N72-27087
- BRADYCARDIA
- Bradycardia diving reflex to apneic face immersion related to physical exercise A72-35964
- BRAIN
- Bioelectric activity of the medulla oblongata during hypothermia and bloodletting A72-35024
- Sperry neuronal specificity hypothesis for nerve cell connections formation between eye and brain during embryonic development, proposing systems matching theory A72-35070
- Russian book - Intracranial blood circulation under conditions of accelerations and weightlessness A72-35460
- BRAIN CIRCULATION
- Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
- BRAIN DAMAGE
- Brain tumors in irradiated monkeys. A72-35647
- Reflex and conditional movement observation of central nervous system function restitution in Macaca mulatta monkeys with cortical lesions, studying pathological forced grasping A72-36977
- BREATHING APPARATUS
- Conference on portable life support systems for human protection [NASA-SP-302] N72-27106
- Portable breathing apparatus containing chlorate candle oxygen source for mine rescue operations N72-27112
- Human tolerance to external respiratory resistance for design of breathing apparatus N72-27127
- Control system analysis for mathematical modeling of respiratory protective devices N72-27128
- Simulation and design of breathing metabolic simulator N72-27129
- Operational performance of pneumatic seal-type facemask design N72-27130
- BRIGHTNESS DISCRIMINATION
- Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity A72-36611
- BRONCHIAL TUBE
- Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system. A72-35972
- BUBBLES
- Dynamics of dissolution of gas bubbles or pockets in tissues. A72-37027

C

- CALCIUM METABOLISM
- Comparative study of two direct methods of bone mineral measurement. A72-34552
- Existence of hypocalcemic factor in human thyroids [NASA-TT-F-14341] N72-27079
- CALORIC STIMULI
- Influence of thermal, osmotic, and chemical stimulations on food and water intake A72-35016
- CAMERAS
- Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution A72-37196

- CAMOUFLAGE**
Determining the detectability range of camouflaged targets.
A72-35690
- CAPILLARY FLOW**
Effects of diffusion impairment on O₂ and CO₂ time courses in pulmonary capillaries.
A72-35967
- CARBOHYDRATE METABOLISM**
Myocardial lipid and carbohydrate metabolism in fasting men during prolonged exercise.
A72-34347
Substrate utilization and glycolysis in the heart.
A72-34977
Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise.
A72-35968
- CARBON DIOXIDE CONCENTRATION**
Regression analysis for steady state N₂ inequality in O₂ consumption calculations.
A72-34542
Relaxation phenomena in the biological carbon cycle under conditions of variable atmospheric CO₂-content.
A72-34897
Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status.
A72-35166
- CARBON DIOXIDE REMOVAL**
Carbon dioxide- and thermal-control in regenerative life support system for extravehicular human protection during advanced space missions
N72-27114
- CARBON DIOXIDE TENSION**
Rebreathing studies of carbon dioxide pressure level effect on carbon dioxide content difference in arterial blood and alveolar gas during exercise and rest
A72-34346
Respiratory frequency and alveolar oxygen and carbon dioxide tension relationship to hypercapnia in man
A72-35965
Effects of diffusion impairment on O₂ and CO₂ time courses in pulmonary capillaries.
A72-35967
Reproducibility of indirect /CO₂/ Fick method for calculation of cardiac output.
A72-35971
- CARDIAC VENTRICLES**
Influence of hyperosmolality on left ventricular stiffness.
A72-34727
Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction.
A72-34997
Acquired complete right bundle branch block without overt cardiac disease Clinical and hemodynamic study of 37 patients.
A72-35821
A human left ventricular control system model for cardiac diagnosis.
A72-37029
- CARDIOGRAPHY**
Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation.
A72-34221
Changes of the mitral echocardiogram with ageing and the influence of atherosclerotic risk factors.
A72-37031
- CARDIOLOGY**
Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amiloride.
A72-34932
Acquired complete right bundle branch block without overt cardiac disease Clinical and hemodynamic study of 37 patients.
A72-35821
Work capacity and physiological responses to maximum exercise in 54 year old men in relation to heart disease and cardiovascular hazard studies
A72-35822
Reproducibility of indirect /CO₂/ Fick method for calculation of cardiac output.
A72-35971
- A human left ventricular control system model for cardiac diagnosis.
A72-37029
- CARDIOVASCULAR SYSTEM**
Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade.
A72-34445
Comparing effects of positive G_y acceleration on cardiovascular and respiratory functions in dogs under normal respiration in air, and when totally immersed in oxygenated fluorocarbon [NASA-CR-127262]
N72-27078
Effects of bromotrifluoromethane inhalation and epinephrine challenge on cardiovascular system [AD-739699]
N72-27098
- CAROTID SINUS REFLEX**
Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia.
A72-36025
- CATALYSTS**
Catalytic effect of cobalt powder on sodium chlorate candles as source of oxygen
N72-27131
- CELL DIVISION**
Cell proliferation in lungs of mice exposed to elevated concentrations of oxygen.
A72-34548
- CELLS (BIOLOGY)**
Soyuz 5 satellite vehicle space flight factors effect on chlorella cells, investigating survival rates and mutability
A72-35279
Lipid composition of growing and starving cells of *Arthrobacter crystallopoietes*.
A72-35835
Biomembrane hydration mechanism of Na-K ion pump of living cell based on fractionation at air-sea interface
A72-36441
Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival times
A72-36448
Freeze etching techniques in electron microscopic investigations of biological cells molecular structure
A72-36829
- CENTER OF GRAVITY**
Instrument for recording position of center of gravity projection in horizontal plane [AD-739439]
N72-27136
- CENTRAL NERVOUS SYSTEM**
Effect of a magnetic field on the nervous system
A72-35010
Neuropathological evaluation of monkeys exposed to body-alone X-radiation.
A72-36439
Manipulation of projected afterimages by means of the physiological theory imposed on the observer.
A72-36920
Reflex and conditional movement observation of central nervous system function restitution in *Macaca mulatta* monkeys with cortical lesions, studying pathological forced grasping
A72-36977
- CENTRIFUGES**
Construction of animal centrifuge, and relationship between discriminability of g differences and location along effective weight continuum [NASA-CR-127067]
N72-26043
- CENTRIFUGING STRESS**
Effects of combined O-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*.
A72-34547
Stress and adaptation responses to repeated acute acceleration.
A72-34729
- CEREBRUM**
Behavioral properties of somatosensory-motor interhemispheric transfer.
A72-35463
Frontal cerebrum region and elementary mental activity
A72-36400

CHARACTER RECOGNITION

SUBJECT INDEX

CHARACTER RECOGNITION

Visual half-field differences in the recognition of bilaterally presented single letters and vertically spelled words.

A72-36908

Novelty, recency and frequency effects on visual recognition and pseudo-recognition thresholds.

A72-36909

CHEMICAL BONDS

The influence of molecular binding on the stopping power of alpha particles in hydrocarbons.

A72-37193

CHEMICAL REACTIONS

Active transport of Na and K ions and reaction mechanism for ATP-ase [NLL-BTS-6898]

N72-27075

CHEMORECEPTORS

Ventilatory peripheral chemoreflex response to hypoxia during physical exercise in native highlanders and altitude-acclimated lowlanders

A72-34345

Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia.

A72-36025

CHEMOTHERAPY

Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amiloride.

A72-34932

Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system.

A72-35397

Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man

A72-36799

Apparatus for programmed oral administration of drugs to large primates in altered environments.

A72-36921

CHLORATES

Catalytic effect of cobalt powder on sodium chlorate candles as source of oxygen

N72-27131

CHLORELLA

Space flight effects on chlorella cell survival and mutability in Zond automatic stations

A72-35278

Soyuz 5 satellite vehicle space flight factors effect on chlorella cells, investigating survival rates and mutability

A72-35279

CHLOROPLASTS

Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea.

A72-35761

CHOLINESTERASE

Cholinesterase methods for assaying pesticide poisoning in blood of aerial applicator personnel [FAA-AM-72-12]

N72-27080

CHROMOSOMES

Influence of a magnetic field on radiation-induced chromosome aberrations in plants

A72-35007

Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment

A72-35280

CHRONIC CONDITIONS

Myocardial ultrastructure in acute and chronic hypoxia.

A72-34988

Myocardial metabolic changes in chronic hypoxia.

A72-34989

Anoxic tolerance of the heart muscle in different types of chronic hypoxia.

A72-34991

Cardiac performance and the coronary circulation of man in chronic hypoxia.

A72-34992

CIRCADIAN RHYTHMS

Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system.

A72-35397

EEG investigation of circadian variations in qualitative and quantitative RNA content in

human leukocytes, noting changes during sleep

A72-36624

CIRCULATORY SYSTEM

Digital computer technique for ballistocardiography simulation, using distributed parameters for vessel segments in circulatory system model

A72-36038

Fluid transfer between blood and tissues during exercise.

A72-36560

CIVIL DEFENSE

Response of human subjects to reduced levels of water consumption under simulated civil defense shelter conditions

N72-26076

CLINICAL MEDICINE

Clinical observations as a research method in physiology

A72-35017

Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution

A72-37196

Biological models for clinical analysis of pulmonary circulation during simulated abnormal pathological or environmental conditions

N72-26044

Naval research on laser caused visual acuity decrement in monkeys and ocular injury in humans

N72-26056

Clinical evaluation of human physiological acclimatization processes in Antarctica

N72-26064

Standardized treatment of decompression sickness occurring while diving under pressure

N72-27088

Multichannel bioelectric control system for simulating neuromuscular movements and treating motor function disturbances

N72-27134

CLOSED ECOLOGICAL SYSTEMS

Design of auxiliary survival shelter as portable life support system in mines

N72-27115

CLUTTER

Time-compressed displays for target detection.

A72-35945

COASTAL ECOLOGY

Biological resources of Chesapeake Bay and measurement of chemical, physical, and meteorological features to improve resources management

N72-26278

CODING

Meaningful shape coding for aircraft switch knobs.

A72-35944

COHERENT RADIATION

Rhesus monkey retinas ultrastructural alteration and damage in rods and cones produced by Q switched ruby laser coherent radiation

A72-35396

COLD ACCLIMATIZATION

Biomedical data reports on human acclimatization to polar regions and psychophysiology

N72-26060

Medical aspects of human cold acclimatization during stay in polar regions

N72-26062

Human physiological reactions and pathology in Antarctic acclimatization

N72-26063

Clinical evaluation of human physiological acclimatization processes in Antarctica

N72-26064

Physiological characteristics of human cold acclimatization in Antarctica

N72-26065

Psychophysiological factors of human adaptation to Antarctic life

N72-26066

Sleep patterns of human adaptation to Antarctic life

N72-26067

Polar light regime effects on human blood system during Antarctic life

N72-26068

Oxygen saturation of human blood during prolonged stay in Antarctic region

N72-26069

- Spirographic examination of human pulmonary functions during stay in Antarctica N72-26070
- Physiological evaluation of thermal insulation properties of camel hair suits for human Arctic stay N72-26071
- COLOR**
- Extraversion, neuroticism, and color preferences. A72-36903
- COLOR VISION**
- Detection and recognition of colored signal lights. A72-35691
- The effect of chlordiazepoxide on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man. A72-35915
- An analytical description of the line element in the zone-fluctuation model of colour vision. I, II. A72-36606
- Fly colour vision. A72-36609
- Hue shifts accompany phase induced modulation enhancement of sinusoidally flickering lights. A72-36613
- COMPENSATORY TRACKING**
- Congruent and spurious motion in the learning and performance of a compensatory tracking task. A72-35692
- COMPLEXITY**
- Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. A72-34248
- Effects of noise and illumination on human motor performance [AD-739474] N72-27095
- COMPRESSION LOADS**
- Nonlinear deformation of intervertebral discs in human spine when subjected to shock loads involving axial compressive impact N72-26857
- COMPUTER GRAPHICS**
- Interactive graphics for structural languages and biological waveform analysis, using special purpose computers [AD-739258] N72-27135
- COMPUTERIZED SIMULATION**
- Computerized simulation of ballistocardiograph subjective evaluation and objective manual measurements, correlating heart beat with ideal pattern A72-36037
- Digital computer technique for ballistocardiography simulation, using distributed parameters for vessel segments in circulatory system model A72-36038
- Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. A72-37028
- Modifying Siegel-Wolf operator simulation model for on-line operation [AD-737798] N72-27138
- COMPUTERS**
- Research in agriculture, computers and cybernetics, medicine, and electronics [JPRS-56202] N72-26061
- CONCORDE AIRCRAFT**
- Passive dosimetric interpretation of cosmic radiation dose rate onboard French prototype of Concorde 001 supersonic transport aircraft N72-26052
- CONDITIONING (LEARNING)**
- Reflex and conditional movement observation of central nervous system function restitution in Macaca mulatta monkeys with cortical lesions, studying pathological forced grasping A72-36977
- CONFERENCES**
- Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1. A72-34976
- Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971.
- Conferences on biophysical approaches to solving problems of ionizing and nonionizing radiation effects during high altitude flight, manned space flight, and ground based equipment [AGARD-CP-95-PT-3] N72-26045
- Conference on portable life support systems for human protection [NASA-SP-302] N72-27106
- Hearing, bioacoustics, and biomechanics for biodynamic models - conference [AD-739501] N72-27140
- CONFIDENCE**
- Obedience to rotation-indicating visual displays as a function of confidence in the displays. A72-35943
- CONTENT**
- Effects of water activity on control and deterioration mechanisms of dehydrated food systems [NASA-CR-114861] N72-26080
- CONTRAST**
- Detection and recognition of colored signal lights. A72-35691
- CONTROL BOARDS**
- Meaningful shape coding for aircraft switch knobs. A72-35944
- CONTROL THEORY**
- Human behavior in control system and game theory [JPRS-56277] N72-26083
- Control system analysis for mathematical modeling of respiratory protective devices N72-27128
- CONVULSIONS**
- Functional development of the altitude convulsion mechanism in mice and rabbits /Research note/. A72-36445
- CORONARY CIRCULATION**
- Cardiac performance and the coronary circulation of man in chronic hypoxia. A72-34992
- Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
- CORPUSCULAR RADIATION**
- The imaging properties of the positron camera A72-36424
- COSMIC RAYS**
- Brief survey of the problems of space radiobiology and radiation safety in space flights. A72-35376
- Active dosimetry for protection and control of cosmic rays in supersonic aircraft N72-26047
- Passive dosimetry for measuring cosmic radiation dosage and its effects during manned space flight N72-26048
- Relative biological effects of heavy cosmic ray ions on living tissue N72-26049
- Effects of accelerated particles and cosmic rays on light flashes in human eye [NASA-TM-X-68460] N72-26051
- Passive dosimetric interpretation of cosmic radiation dose rate onboard French prototype of Concorde 001 supersonic transport aircraft N72-26052
- CRASH INJURIES**
- Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with special reference to spinal fractures. A72-34556
- CROP GROWTH**
- Action of a constant magnetic field on plant growth A72-35006
- CUES**
- Vergence eye movements to pairs of disparity stimuli with shape selection cues. A72-36612
- Effects of visual cues on the standing body sway of males and females. A72-36918
- CURING**
- The effects of various cure cycles upon the viability of Bacillus subtilis var. niger spores within solid propellant. A72-36437

CYBERNETICS

Research in agriculture, computers and cybernetics, medicine, and electronics [JPRS-56202] N72-26061

CYTOLOGY

Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
Myocardial ultrastructure in acute and chronic hypoxia. A72-34988

D

DARK ADAPTATION

Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity A72-36611

Effects of accelerated particles and cosmic rays on light flashes in human eye [NASA-TN-X-68460] N72-26051

DE HAVILLAND AIRCRAFT

Noise environment of C-7A during ground and airborne operation [AD-738627] N72-27086

DEACTIVATION

Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique A72-36313

DECOMPRESSION SICKNESS

Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr. A72-34544

Influence of prolonged starvation on the frequency of occurrence of decompression-induced pulmonary hemorrhage. A72-34545

Effects of vagotomy and increased blood pressure on the incidence of decompression-induced pulmonary hemorrhage. A72-36446

Standardized treatment of decompression sickness occurring while diving under pressure [AD-737700] N72-27088

Design of portable decompression chamber with semiclosed gas recirculation system for treating underwater divers N72-27116

DEHYDRATED FOOD

Effects of water activity on control and deterioration mechanisms of dehydrated food systems [NASA-CR-114861] N72-26080

DESERT ADAPTATION

Natural acclimatization to work in severe heat. A72-34550
New data on physiological adaptations to arid zones A72-35021

DETERIORATION

Effects of water activity on control and deterioration mechanisms of dehydrated food systems [NASA-CR-114861] N72-26080

DIASTOLE

Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. A72-34298

DIETS

Rat pulmonary lipid metabolism during feeding and fasting from studies of lung lecithin half life after C-14/1/palmitate and H-3/U/glucose injection A72-36573

DIGITAL FILTERS

Mathematical methods for improving the significance of scintigrams A72-36425

DISCRIMINATION

Construction of animal centrifuge, and relationship between discriminability of g differences and location along effective weight continuum [NASA-CR-127067] N72-26043

DISORIENTATION

Obedience to rotation-indicating visual displays as a function of confidence in the displays. A72-35943

DISPLAY DEVICES

Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. A72-34248

Obedience to rotation-indicating visual displays as a function of confidence in the displays. A72-35943

Recent research applicable to the design of electronic displays. A72-36902

DISSOLVING

Dynamics of dissolution of gas bubbles or pockets in tissues. A72-37027

DIORESIS

Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs A72-35917

DIVING (UNDERWATER)

Bradycardia diving reflex to apneic face immersion related to physical exercise A72-35964

Standardized treatment of decompression sickness occurring while diving under pressure [AD-737700] A72-27088

Research in deep sea diving and lightning triggered by man N72-27099

Development of deep sea diving technology N72-27100

Design of gas mixture breathing systems for underwater diver equipment N72-27108

Design of deep sea heavy duty diving equipment for salvage divers N72-27118

Performance of closed circuit mixed gas underwater breathing apparatus N72-27119

Diving suit and heat element combinations for thermal protection of underwater divers N72-27120

Design and performance of prototype portable heat source for providing thermal insulation in diving suit N72-27122

DOSAGE

Apparatus for programmed oral administration of drugs to large primates in altered environments. A72-36921

DOSIMETERS

Active dosimetry for protection and control of cosmic rays in supersonic aircraft N72-26047

Passive dosimetry for measuring cosmic radiation dosage and its effects during manned space flight N72-26048

Passive dosimetric interpretation of cosmic radiation dose rate onboard French prototype of Concorde 001 supersonic transport aircraft N72-26052

DROSOPHILA

Natural ionizing radiation effects on multiplication of unicellular organisms and Drosophila melanoqaster development N72-26050.

DRUGS

Apparatus for programmed oral administration of drugs to large primates in altered environments. A72-36921

DYNAMIC CONTROL

Experimental investigation of an astronaut maneuvering scheme. A72-37026

DYNAMIC MODELS

Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure A72-36039

E

EAR

Thermal relationship between tympanic membrane and hypothalamus in conscious cat and monkey. A72-34344

SUBJECT INDEX

ENZYME ACTIVITY

- EARDRUMS**
Human eardrum rupture and hearing loss injuries from nuclear explosions [AD-737643] N72-27092
- EFFERENT NERVOUS SYSTEMS**
Multilevel motion control A72-35018
Servo action in human voluntary movement. A72-36999
- EGGS**
Effects of combined 0-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*. A72-34547
The influence of clinostat rotation on the fertilized amphibian egg. A72-36435
- ELECTRIC STIMULI**
Neuroinhibition in the regulation of emesis. A72-36449
Vicarious influence effect on eliciting pain in individuals subjected to previously reported nonpainful electric shocks A72-36916
- ELECTRIC WIRE**
Microbiological assay of electric wire bundle from Surveyor 3 spacecraft N72-26769
- ELECTROCARDIOGRAPHY**
Some preliminary observations on the correlation of the high frequency /acceleration/ direct-body ballistocardiogram with the apex cardiogram, carotid pulse and their derivatives. A72-36036
- ELECTRODES**
Compressible electrolyte saturated sponge electrode for biomedical applications [NASA-CASE-MSC-13648] N72-27103
- ELECTROENCEPHALOGRAPHY**
Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions. A72-34247
Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. A72-34248
- ELECTROLYTE METABOLISM**
Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/-K⁺/-ATP-ase activity of rat tissue microsomes. A72-34546
Changes of intracellular myocardial electrolytes in experimental hypertension. A72-34984
Ion alterations during myocardial ischemia. A72-34994
- ELECTROLYTES**
Automated, six channel, discrete sample electrolyte analyzer, using peristaltic pump [AD-737568] N72-27091
Compressible electrolyte saturated sponge electrode for biomedical applications [NASA-CASE-MSC-13648] N72-27103
- ELECTROMAGNETIC NOISE**
Intraocular noise - Origin and characteristics. A72-36605
- ELECTROMAGNETIC RADIATION**
Microwave radiation - Biophysical considerations and standards criteria. A72-34299
Biological effects of UHF electromagnetic radar emissions on human organism N72-26053
Navy research and instrumentation for analyzing nonionizing radiation effects on human personnel N72-26054
- ELECTRON MICROSCOPES**
Freeze etching techniques in electron microscopic investigations of biological cells molecular structure A72-36829
- ELECTRON MOBILITY**
Normal and hypoxic myocardium mitochondrial metabolism process, studying electron transport system A72-34978
- Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival times A72-36448
- ELECTRONIC EQUIPMENT**
Research in agriculture, computers and cybernetics, medicine, and electronics [JPRS-56202] N72-26061
- ELECTROPHYSIOLOGY**
Interactive graphics for structural languages and biological waveform analysis, using special purpose computers [AD-739258] N72-27135
- ELECTRORETINOGRAPHY**
Electroretinographic evidence for a photopic system in the rat. A72-34878
Intraocular noise - Origin and characteristics. A72-36605
- EMBRYOLOGY**
Sperry neuronal specificity hypothesis for nerve cell connections formation between eye and brain during embryonic development, proposing systems matching theory A72-35070
- EMERGENCY LIFE SUSTAINING SYSTEMS**
Effectiveness and limitations of current portable oxygen breathing equipment for mine rescue operations N72-27107
Design of portable decompression chamber with semiclosed gas recirculation system for treating underwater divers N72-27116
Life support system for rescue crew in altitude chamber tests N72-27133
- EMOTIONAL FACTORS**
Increase in skeletal muscle performance during emotional stress in man. A72-34942
- ENDOCRINE SECRETIONS**
Existence of hypocalcemic factor in human thyroids [NASA-TT-F-14341] N72-27079
- ENERGY CONVERSION**
Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. A72-34993
- ENERGY STORAGE**
Changes in energy stores in the hypoxic heart. A72-34985
- ENVIRONMENT SIMULATION**
Biological models for clinical analysis of pulmonary circulation during simulated abnormal pathological or environmental conditions [NASA-CR-127111] N72-26044
Bibliography of simulation models for vegetation [NASA-CR-127426] N72-27082
- ENVIRONMENT SIMULATORS**
Simulation and design of breathing metabolic simulator N72-27129
- ENVIRONMENTAL CONTROL**
Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique A72-36313
- ENVIRONMENTAL TESTS**
Blood oxygenating ability of helium- and argon-oxygen environments relative to air, using alveolar gas equation to predict arterial oxygen pressure A72-36438
- ENZYME ACTIVITY**
Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/-K⁺/-ATP-ase activity of rat tissue microsomes. A72-34546
Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism A72-35003
Inhibitory effects of glucose on biosynthetic respiratory adaptation of protoheme by yeast [NASA-TT-F-14330] N72-26073
Effects of water activity on control and deterioration mechanisms of dehydrated food

systems
[NASA-CR-114861] N72-26080

ENZYMES
Active transport of Na and K ions and reaction mechanism for ATP-ase
[NLL-RTS-6898] N72-27075

EPINEPHRINE
Effects of bromotrifluoromethane inhalation and epinephrine challenge on cardiovascular system
[AD-739699] N72-27098

EQUILIBRIUM
Tests of broadband high intensity noise on human equilibrium
[AD-737826] N72-27093

EQUIPMENT SPECIFICATIONS
Modified Apollo portable life support system for Skylab astronauts N72-27117

ERGOMETERS
Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients. A72-36034
Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911

ERROR ANALYSIS
Error arising from experimenter influence on subject behavior and performance, discussing expectancy effects on stimulus presentation and IQ and success-failure judgments A72-36907

ERRORS
Human operator errors in performing audio-video and audio only tracking tasks N72-26078

ERYTHROCYTES
Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids. A72-34553

ETCHING
Freeze etching techniques in electron microscopic investigations of biological cells molecular structure A72-36829

ETHYL ALCOHOL
Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34554

EVOLUTION (DEVELOPMENT)
Natural ionizing radiation effects on multiplication of unicellular organisms and Drosophila melanogaster development N72-26050

EXCRETION
Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny A72-35022

EXOBIOLOGY
Results of studies on microorganisms with direct bearing on space biology
[NASA-TT-F-14307] N72-27081

EXPLOSIVE DECOMPRESSION
Influence of prolonged starvation on the frequency of occurrence of decompression-induced pulmonary hemorrhage. A72-34545

EXTRATERRESTRIAL RADIATION
A new model for estimating space proton dose to body organs. A72-35354

EXTRAVEHICULAR ACTIVITY
Portable life support system for astronaut working outside of lunar module N72-27109
Regenerative portable life support system development for extravehicular human activities during advanced space missions N72-27113
Carbon dioxide- and thermal-control in regenerative life support system for extravehicular human protection during advanced space missions N72-27114

EXTROVERSION
Extroversion, neuroticism, and color preferences.

EYE (ANATOMY) A72-36903
The distribution of the long wave photoreceptors in the compound eye of the honey bee as revealed by selective osmic staining. A72-34877
Light induced alterations in growth pattern of the avian eye. A72-34880
Sperry neuronal specificity hypothesis for nerve cell connections formation between eye and brain during embryonic development, proposing systems matching theory A72-35070
Intraocular noise - Origin and characteristics. A72-36605
Fly colour vision. A72-36609

EYE DOMINANCE
Quantitative decision criteria for identification of visual evoked responses obtained during binocular rivalry. A72-36312

EYE EXAMINATIONS
Considerations in the design of an automatic visual field tester. A72-37013
Ophthalmologic examinations for determining retina damage caused by helium-neon laser boresights [AD-738629] N72-27087

EYE MOVEMENTS
The effect of target contrast variation on dynamic visual acuity and eye movements. A72-34876
Eye movement pattern monitoring to investigate retinal afterimage role in release of pursuit movements A72-34886
Russian book - Eye movements as the basis of spatial vision and as a model of behavior A72-35459
REM period functional maintenance of coordinated eye movement facilitation and binocular depth perception accuracy following sleep A72-35462
Optokinetic thresholds in the normal monkey. A72-36610
Vergence eye movements to pairs of disparity stimuli with shape selection cues. A72-36612
Personality correlates of lateral eye movement and handedness. A72-36905
Naval research on laser caused visual acuity decrement in monkeys and ocular injury in humans N72-26056
Otolith organ response of normal vision people and persons with severe bilateral labyrinthine function loss exposed to prolonged tilt [NASA-CR-127034] N72-26058

F

FATIGUE (BIOLOGY)
The role of inhibition in the fatigue phenomenon A72-35015

FATTY ACIDS
Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction. A72-34997

FEED SYSTEMS
Pressurized tank for feeding liquid waste into processing equipment
[NASA-CASE-LAR-10365-1] N72-27102

FIGHTER AIRCRAFT
Performance of human model in controlling attacking fighter aircraft N72-26077

FINES
Analysis of vegetable seedlings grown in contact with Apollo 14 lunar surface fines. A72-35925

FLASH LAMPS
Effects of high intensity anticollision light pulses on physiological responses of instrument rated pilots and non-pilots [PAA-AH-72-8] N72-26072

FLICKER

Eye shifts accompany phase induced modulation enhancement of sinusoidally flickering lights. A72-36613

FLIGHT HAZARDS

Airline management and flight crew role in prevention, detection and dealing with airline pilot incapacitation in flight, noting physiological and psychological factor recognition A72-34555

FLIGHT SIMULATION

Simulation and training for spacecraft docking N72-27882

FLIGHT TRAINING

Effects of instructions on measures of state and trait anxiety in flight students. A72-34464

FLOW THEORY

Mathematical models for flow ejection and aorta pressures based on displacement ballistocardiography and time dependent incompressible flow theories respectively A72-36035

FLUORESCENCE

Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea. A72-35761

FLUOROCARBONS

Comparing effects of positive Gy acceleration on cardiovascular and respiratory functions in dogs under normal respiration in air, and when totally immersed in oxygenated fluorocarbon [NASA-CR-127262] N72-27078

FOOD INTAKE

Myocardial lipid and carbohydrate metabolism in fasting men during prolonged exercise. A72-34347

Influence of prolonged starvation on the frequency of occurrence of decompression-induced pulmonary hemorrhage. A72-34545

Influence of thermal, osmotic, and chemical stimulations on food and water intake A72-35016

FOVEA

Colorimetric photometric matching tests, showing subject differences in parafoveal spectral sensitivity indicated by photopic curve peaks A72-34882

Effect of selective adaptation on detection of simple and compound parafoveal stimuli. A72-36607

FREEZING

Freeze etching techniques in electron microscopic investigations of biological cells molecular structure A72-36829

FREQUENCY RESPONSE

Linear-nonlinear-linear transition as a function of frequency in the retinal response to light. A72-34885

G**GALACTIC RADIATION**

Brief survey of the problems of space radiobiology and radiation safety in space flights. A72-35376

GAME THEORY

Human behavior in control system and game theory [JPRS-56277] N72-26083

GAMMA RAY BEAMS

Comparative study of two direct methods of bone mineral measurement. A72-34552

GAMMA RAYS

Effect of lunar ground on radiation damage in mice A72-35214

Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique A72-36313

The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters. A72-37197

GAS DYNAMICS

Gas dynamics and chemistry of lightning-produced shock waves /thunder/ in postulated primordial reducing atmosphere, noting amino acid production A72-36443

GAS EXCHANGE

Pulmonary gas exchange in Andean natives at high altitude. A72-36570

A model of fluctuating alveolar gas exchange during the respiratory cycle. A72-36571

GAS MIXTURES

Blood oxygenating ability of helium- and argon-oxygen environments relative to air, using alveolar gas equation to predict arterial oxygen pressure A72-36438

GAS POCKETS

Dynamics of dissolution of gas bubbles or pockets in tissues. A72-37027

GASEOUS DIFFUSION

Effects of diffusion impairment on O2 and CO2 time courses in pulmonary capillaries. A72-35967

Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion A72-37030

GERMINATION

Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment A72-35280

Thermal activation and relative humidity effects on spore pregermination [NASA-CR-127525] N72-27077

GLUCOSE

Inhibitory effects of glucose on biosynthetic respiratory adaptation of protoheme by yeast [NASA-TT-F-14330] N72-26073

GLYCOLYSIS

Substrate utilization and glycolysis in the heart. A72-34977

GRAVITATIONAL EFFECTS

Effects of combined 0-G simulation and hypergravity on eggs of the nematode, Ascaris suum. A72-34547

Vestibular behavior of fish during diminished g-force and weightlessness. A72-34549

The influence of clinostat rotation on the fertilized amphibian egg. A72-36435

GROWTH

Light induced alterations in growth pattern of the avian eye. A72-34880

Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny A72-35022

Functional development of the altitude convulsion mechanism in mice and rabbits /Research note/. A72-36445

H**HABITABILITY**

Habitability factors in a rotating space station. A72-36436

HALOGEN COMPOUNDS

Effects of bromotrifluoromethane inhalation and epinephrine challenge on cardiovascular system [AD-739699] N72-27098

HANDEDNESS

Personality correlates of lateral eye movement and handedness. A72-36905

HARMONIC MOTION

Nonlinear oscillatory system models for representation of reactions of human operators to harmonic and random vibrational action [NASA-TT-F-14289] N72-26085

HEARING

Human eardrum rupture and hearing loss injuries from nuclear explosions

HEART

SUBJECT INDEX

- [AD-737643] N72-27092
Hearing, bioacoustics, and biomechanics for
biodynamic models - conference
[AD-739501] N72-27140
- HEART**
The effects of acute hypoxia on lipid synthesis in
the rat heart. A72-34979
Changes in energy stores in the hypoxic heart. A72-34985
- HEART DISEASES**
Exchangeable potassium in heart disease -
Long-term effects of potassium supplements and
amiloride. A72-34932
Myocardial ultrastructure in acute and chronic
hypoxia. A72-34988
Morphological alterations in the ischaemic heart. A72-34995
Acquired complete right bundle branch block
without overt cardiac disease Clinical and
hemodynamic study of 37 patients. A72-35821
Work capacity and physiological responses to
maximum exercise in 54 year old men in relation
to heart disease and cardiovascular hazard studies
A72-35822
Correlation between ergometry,
ballistocardiography and coronary angiography in
267 patients. A72-36034
Changes of the mitral echocardiogram with ageing
and the influence of atherosclerotic risk factors.
A72-37031
- HEART FUNCTION**
Non-invasive assessment of prosthetic mitral
paravalvular and intravalvular regurgitation.
A72-34221
Hemodynamic changes in man during immersion with
the head above water. A72-34543
Influence of hyperosmolality on left ventricular
stiffness. A72-34727
Metabolism of the hypoxic and ischaemic heart;
Proceedings of the Symposium, Geneva,
Switzerland, June 14-17, 1971. Part 1. A72-34976
Substrate utilization and glycolysis in the heart. A72-34977
The influence of exogenous ATP on cardiac
metabolism in acute hypoxia. A72-34987
Cardiac performance and the coronary circulation
of man in chronic hypoxia. A72-34992
Effect of chronic hypoxia on the kinetics of
energy transformation in heart mitochondria. A72-34993
Effects of hypoxia and ischemia on myocardial
contraction - Alterations in the time course of
force and ischemia-dependent inhomogeneity of
contractility. A72-34996
Trophic support of cardiac activity A72-35020
Mathematical models for flow ejection and aorta
pressures based on displacement
ballistocardiography and time dependent
incompressible flow theories respectively A72-36035
Some preliminary observations on the correlation
of the high frequency /acceleration/ direct-body
ballistocardiogram with the apex cardiogram,
carotid pulse and their derivatives. A72-36036
Computerized simulation of ballistocardiograph
subjective evaluation and objective manual
measurements, correlating heart beat with ideal
pattern A72-36037
Thermoregulation during positive and negative work
at different environmental temperatures. A72-36559
- HEART RATE**
Heat, noise and vibration stress combined effects
on skin and rectal temperature, heart rate,
weight loss and biochemical urinalysis A72-36446
- Reproducibility of indirect /CO₂/ Pick method for
calculation of cardiac output. A72-34551
A72-35971
Synchronous and asynchronous BASH /body
acceleration synchronous with heart beat/
effects on hemodynamics and ventilation in dogs
and humans A72-36033
Some preliminary observations on the correlation
of the high frequency /acceleration/ direct-body
ballistocardiogram with the apex cardiogram,
carotid pulse and their derivatives. A72-36036
Heart rate monitor for indicating physical fitness
level in individuals
[AD-738882] N72-26088
- HEAT TOLERANCE**
Natural acclimatization to work in severe heat. A72-34550
Hemodynamic thermoregulatory and sympathoadrenal
responses to heat acclimatization in man during
supine and upright position exercise A72-35963
Skin temperatures in warm environments and the
control of sweat evaporation. A72-35969
- HEATING EQUIPMENT**
Design and performance of prototype portable heat
source for providing thermal insulation in
diving suit N72-27122
- HEAVY IONS**
Relative biological effects of heavy cosmic ray
ions on living tissue N72-26049
- HELICOPTERS**
Performance measurement in helicopter training and
operations. A72-35550
[PP-10-72]
Pilot performance and reaction time in response to
auditory signals during low level helicopter
flight N72-26086
[ISVR-TR-54]
- HELIUM-NEON LASERS**
Ophthalmologic examinations for determining retina
damage caused by helium-neon laser boreights
[AD-738629] N72-27087
- HEMATOCRIT**
Disproportional changes in hematocrit, plasma
volume, and proteins during exercise and bed rest.
A72-35966
- HEMODYNAMIC RESPONSES**
Hemodynamic changes in man during immersion with
the head above water. A72-34543
Hemodynamic thermoregulatory and sympathoadrenal
responses to heat acclimatization in man during
supine and upright position exercise A72-35963
Bradycardia diving reflex to apneic face immersion
related to physical exercise A72-35964
Venous responses to stimulation of carotid
chemoreceptors by hypoxia and hypercapnia. A72-36025
Synchronous and asynchronous BASH /body
acceleration synchronous with heart beat/
effects on hemodynamics and ventilation in dogs
and humans A72-36033
- HEMODYNAMICS**
Acquired complete right bundle branch block
without overt cardiac disease Clinical and
hemodynamic study of 37 patients. A72-35821
- HEMOGLOBIN**
Hemoglobin-facilitated diffusion of oxygen -
Interfacial and thickness effects. A72-36569
- HEMORRHAGES**
Influence of prolonged starvation on the frequency
of occurrence of decompression-induced pulmonary
hemorrhage. A72-34545
Effects of vagotomy and increased blood pressure
on the incidence of decompression-induced
pulmonary hemorrhage. A72-36446

HIGH ALTITUDE

Conferences on biophysical approaches to solving problems of ionizing and nonionizing radiation effects during high altitude flight, manned space flight, and ground based equipment [AGARD-CP-95-PT-3] N72-26045

HIGH ALTITUDE BREATHING

USAF custom fit oxygen mask program. A72-34559

HIGH ALTITUDE ENVIRONMENTS

Blood coagulation changes at high altitude predisposing to pulmonary hypertension. A72-34222

HOMEOSTASIS

Gas induced osmosis as factor in pulmonary homeostasis, showing differential water retention in lungs ventilated with normoxic nitrous oxide compared with air A72-35970

HORMONE METABOLISMS

Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs A72-35917

HUMAN BEHAVIOR

Russian book - Eye movements as the basis of spatial vision and as a model of behavior A72-35459

Behavioral properties of somatosensory-motor interhemispheric transfer. A72-35463

Error arising from experimenter influence on subject behavior and performance, discussing expectancy effects on stimulus presentation and IQ and success-failure judgments A72-36907

Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911

Vicarious influence effect on eliciting pain in individuals subjected to previously reported nonpainful electric shocks A72-36916

Human behavior in control system and game theory [JPRS-56277] N72-26083

HUMAN BEINGS

Pigs role as ideal experimental animal in human biomedical research, discussing investigations to emphasize similarities A72-36440

Biological effects of UHF electromagnetic radar emissions on human organism N72-26053

Existence of hypocalcemic factor in human thyroids [NASA-TT-F-14341] N72-27079

HUMAN BODY

Two-mass system as human body dynamic model in ballistocardiography, outlining transfer function parameter computation procedure A72-36039

Neck cooling collar for improved thermal comfort in hot weather N72-27126

HUMAN FACTORS ENGINEERING

Meaningful shape coding for aircraft switch knobs. A72-35944

Performance of human model in controlling attacking fighter aircraft N72-26077

Man machine systems and control, and engineering psychology [JPRS-56297] N72-26084

Steady state and transient temperature distributions in human thigh covered with cooling pad [NASA-CR-127523] N72-27084

Conference on portable life support systems for human protection [NASA-SP-302] N72-27106

Portable air supply and monitoring system for personnel working on offshore platform piling N72-27123

Human factors engineering viewpoint of psychophysiological measurements applied to maintainability evaluation of equipment design [AD-739437] N72-27137

Response time to vibrotactile stimulus in relation to signal amplitude and frequency variation [AD-739433] N72-27139

HUMAN PATHOLOGY

Human physiological reactions and pathology in Antarctic acclimatization N72-26063

HUMAN PERFORMANCE

Possibilities and dangers during long working periods in space rescue. A72-34436

Natural acclimatization to work in severe heat. A72-34550

Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34554

Error arising from experimenter influence on subject behavior and performance, discussing expectancy effects on stimulus presentation and IQ and success-failure judgments A72-36907

Psychological tests to judge maximum and minimum nonphysical subjective attraction forces between two parallel bars A72-36919

Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure A72-37220

Determination of optimal work-rest cycles for individuals and crews to yield high performance and maximum man machine effectiveness [AD-738916] N72-26087

Stimulus durations and individual differences approach for monitoring performance across sense modes [AD-737735] N72-27089

Analysis of arm performance subjected to external load during crank turning task [AD-739478] N72-27096

Effect of noise and temperature on human performance of simple manual dexterity task [AD-739432] N72-27097

Gravity simulation by rotation and effects on human performance [NASA-CR-111866] N72-27104

Reliability of complex tracking task performed concurrently with other tasks or tracking alone condition [FAA-AM-72-21] N72-27105

HUMAN REACTIONS

Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity A72-36611

Repression-sensitization and duration of visual attention. A72-36917

Physiological and psychological effects of low and high magnetic fields on man [NASA-CR-127049] N72-26055

Nonlinear oscillatory system models for representation of reactions of human operators to harmonic and random vibrational action [NASA-TT-F-14289] N72-26085

Tests of broadband high intensity noise on human equilibrium [AD-737826] N72-27093

HUMAN TOLERANCES

A new model for estimating space proton dose to body organs. A72-35354

Hemodynamic thermoregulatory and sympathoadrenal responses to heat acclimatization in man during supine and upright position exercise A72-35963

Respiratory frequency and alveolar oxygen and carbon dioxide tension relationship to hypercapnia in man A72-35965

Skin temperatures in warm environments and the control of sweat evaporation. A72-35969

Medical aspects of human cold acclimatization during stay in polar regions [JPRS-56225] N72-26062

Human physiological reactions and pathology in Antarctic acclimatization

HUMIDITY

- Clinical evaluation of human physiological acclimatization processes in Antarctica N72-26063
- Physiological characteristics of human cold acclimatization in Antarctica N72-26064
- Psychophysiological factors of human adaptation to Antarctic life N72-26065
- Sleep patterns of human adaptation to Antarctic life N72-26066
- Polar light regime effects on human blood system during Antarctic life N72-26067
- Oxygen saturation of human blood during prolonged stay in Antarctic region N72-26068
- Spirographic examination of human pulmonary functions during stay in Antarctica N72-26069
- Physiological evaluation of thermal insulation properties of camel hair suits for human Arctic stay N72-26070
- Response of human subjects to reduced levels of water consumption under simulated civil defense shelter conditions N72-26071
- [AD-738562] Human tolerance to external respiratory resistance for design of breathing apparatus N72-26076
- N72-27127
- HUMIDITY**
- Thermal activation and relative humidity effects on spore pregermination [NASA-CR-127525] N72-27077
- HYDRATION**
- Biomembrane hydration mechanism of Na-K ion pump of living cell based on fractionation at air-sea interface A72-36441
- HYDROCARBONS**
- The influence of molecular binding on the stopping power of alpha particles in hydrocarbons. A72-37193
- Effects of bromotrifluoromethane inhalation and epinephrine challenge on cardiovascular system [AD-739699] N72-27098
- HYPERCAPNIA**
- Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status. A72-35166
- Respiratory frequency and alveolar oxygen and carbon dioxide tension relationship to hypercapnia in man A72-35965
- Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia. A72-36025
- HYPERTENSION**
- Blood coagulation changes at high altitude predisposing to pulmonary hypertension. A72-34222
- Changes of intracellular myocardial electrolytes in experimental hypertension. A72-34984
- HYPOBARIC ATMOSPHERES**
- Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids. A72-34553
- HYPOTHALAMUS**
- Thermal relationship between tympanic membrane and hypothalamus in conscious cat and monkey. A72-34344
- Effect of a magnetic field on experimental tumors /direct and via nervous system/ A72-35011
- Influence of thermal, osmotic, and chemical stimulations on food and water intake A72-35016
- Trophic support of cardiac activity A72-35020
- HYPOTHERMIA**
- Bioelectric activity of the medulla oblongata during hypothermia and bloodletting A72-35024
- HYPOXEMIA**
- Cardiac performance and the coronary circulation of man in chronic hypoxia.

SUBJECT INDEX

- HYPOXIA** A72-34992
- Ventilatory peripheral chemoreflex response to hypoxia during physical exercise in native highlanders and altitude-acclimated lowlanders A72-34345
- Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATP-ase activity of rat tissue microsomes. A72-34546
- Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1. A72-34976
- Normal and hypoxic myocardium mitochondrial metabolism process, studying electron transport system A72-34978
- The effects of acute hypoxia on lipid synthesis in the rat heart. A72-34979
- Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
- Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes. A72-34983
- Changes in energy stores in the hypoxic heart. A72-34985
- The intramyocardial oxygen pressure at normoxia and hypoxia. A72-34986
- The influence of exogenous ATP on cardiac metabolism in acute hypoxia. A72-34987
- Myocardial ultrastructure in acute and chronic hypoxia. A72-34988
- Myocardial metabolic changes in chronic hypoxia. A72-34989
- Role of the synthesis of nucleic acids and proteins in the adaptation of the organism to altitude hypoxia. A72-34990
- Anoxic tolerance of the heart muscle in different types of chronic hypoxia. A72-34991
- Cardiac performance and the coronary circulation of man in chronic hypoxia. A72-34992
- Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. A72-34993
- Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility. A72-34996
- Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status. A72-35166
- Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia. A72-36025
- Functional development of the altitude convulsion mechanism in mice and rabbits /Research note/. A72-36445
- Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed. A72-36572
- Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion A72-37030
- Oxygen saturation of human blood during prolonged stay in Antarctic region N72-26069
- ILLUMINATION**
- Effects of noise and illumination on human motor performance [AD-739474] N72-27095

IMAGE CONTRAST

Gain control and contrast sensitivity in the vertebrate retina. A72-34418

The effect of target contrast variation on dynamic visual acuity and eye movements. A72-34876

The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in *Rana esculenta*. A72-34883

Peripheral contrast thresholds for moving images. A72-35688

The relative importance of contrast and motion in visual detection. A72-35689

IMAGING TECHNIQUES

The imaging properties of the positron camera A72-36424

Mathematical methods for improving the significance of scintigrams A72-36425

IMINES

Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment A72-35280

IMMUNOLOGY

Acute myocardial anoxia - Anatomical changes and their possible relation to immunological processes. A72-34981

The magnetic field, infection and immunity A72-35009

INDEXES (DOCUMENTATION)

Annotated bibliography and index on Aerospace Medicine and Biology - April 1972 A72-26042

Annotated bibliography and indexes on Aerospace Medicine and Biology - May 1972 A72-27076

INDUSTRIAL SAFETY

Clinical hygienic and experimental data on magnetic field effects under working conditions A72-35012

INFARCTION

Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction. A72-34997

INFECTIOUS DISEASES

The magnetic field, infection and immunity A72-35009

INFRARED DETECTORS

Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution A72-37196

INHIBITION

The role of inhibition in the fatigue phenomenon A72-35015

INSTRUMENT APPROACH

Pilot steering error in simulated instrument flight approach to terminal area [AD-739309] A72-27085

INTELLIGENCE

Frontal cerebrum region and elementary mental activity A72-36400

INTERFACIAL ENERGY

Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival times A72-36448

INTRACRANIAL PRESSURE

Russian book - Intracranial blood circulation under conditions of accelerations and weightlessness A72-35460

ION EXCHANGE MEMBRANE ELECTROLYTES

Biomembrane hydration mechanism of Na-K ion pump of living cell based on fractionation at air-sea interface A72-36441

IONIC MOBILITY

Acceleration stress tolerance dependence on electron or ion transport across cell surface activation energy barrier, studying rat survival

times

A72-36448

IONIZING RADIATION

Natural ionizing radiation effects on multiplication of unicellular organisms and *Drosophila melanogaster* development N72-26050

ISCHEMIA

Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1. A72-34976

Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980

Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes. A72-34983

Ion alterations during myocardial ischemia. A72-34994

Morphological alterations in the ischaemic heart. A72-34995

Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility. A72-34996

ISOTOPIC LABELING

Cell proliferation in lungs of mice exposed to elevated concentrations of oxygen. A72-34548

The uptake, metabolism and release of C-14/-taurine by rat retina in vitro. A72-34881

Rat pulmonary lipid metabolism during feeding and fasting from studies of lung lecithin half life after C-14/1/palmitate and H-3/U/glucose injection A72-36573

Needle type solid state detectors for in vivo measurement of tracer activity. A72-37194

Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds. A72-37195

L**LABYRINTH**

Otolith organ response of normal vision people and persons with severe bilateral labyrinthine function loss exposed to prolonged tilt [NASA-CR-127034] N72-26058

LANDING SIMULATION

Pilot steering error in simulated instrument flight approach to terminal area [AD-739309] N72-27085

LASERS

Naval research on laser caused visual acuity decrement in monkeys and ocular injury in humans N72-26056

Safety codes for operators using laser equipment N72-26057

LESIONS

Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982

LEUKEMIAS

Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system. A72-35397

LEUKOCYTES

EEG investigation of circadian variations in qualitative and quantitative RNA content in human leukocytes, noting changes during sleep A72-36624

LIFE SPAN

Assessment of life span age difference relations in visual perceptual tasks, taking into account maturational and generational differences A72-36910

LIFE SUPPORT SYSTEMS

USAF custom fit oxygen mask program. A72-34559

Lunar horticulture possible role as life support system of earth independent lunar colony

LIGHT (VISIBLE RADIATION)

SUBJECT INDEX

Continuous flow general aviation oxygen masks.
[SAE AS 1224] A72-35938
A72-36536

LIGHT (VISIBLE RADIATION)
Visible and invisible nonionizing radiation
produced human injuries, considering visual and
retinal effects and induced thermal stresses A72-34300
Polar light regime effects on human blood system
during Antarctic life N72-26068

LIGHT ADAPTATION
Colorimetric photometric matching tests, showing
subject differences in parafoveal spectral
sensitivity indicated by photopic curve peaks A72-34882
Linear-nonlinear-linear transition as a function
of frequency in the retinal response to light. A72-34885

LIGHT MODULATION
Hue shifts accompany phase induced modulation
enhancement of sinusoidally flickering lights. A72-36613

LIGHTNING
Gas dynamics and chemistry of lightning-produced
shock waves /thunder/ in postulated primordial
reducing atmosphere, noting amino acid production A72-36443
Research in deep sea diving and lightning
triggered by man N72-27099

LIPID METABOLISM
Myocardial lipid and carbohydrate metabolism in
fasting men during prolonged exercise. A72-34347
Effects of in vivo inhalation of 100% oxygen at
reduced pressure on serum and red cell lipids. A72-34553
The effects of acute hypoxia on lipid synthesis in
the rat heart. A72-34979
Lipid composition of growing and starving cells of
Arthrobacter crystallopoietes. A72-35835
Effect of nicotinic acid on myocardial metabolism
in man at rest and during exercise. A72-35968
Rat pulmonary lipid metabolism during feeding and
fasting from studies of lung lecithin half life
after C-14/1/palmitate and H-3/U/glucose injection A72-36573

LIQUID BREATHING
Comparing effects of positive Gy acceleration on
cardiovascular and respiratory functions in dogs
under normal respiration in air, and when
totally immersed in oxygenated fluorocarbon
[NASA-CR-127262] N72-27078

LIQUID COOLING
Steady state and transient temperature
distributions in human thigh covered with
cooling pad [NASA-CR-127523] N72-27084
Performance of liquid cooled garment system inside
pressure suit of pilot N72-27121
Water cooled pressure suit with regional body
cooling for metabolic heat removal N72-27124
Automatic controller of liquid cooled space suit
using human sweat rate as input signal N72-27125
Neck cooling collar for improved thermal comfort
in hot weather N72-27126

LIQUIDS
Pressurized tank for feeding liquid waste into
processing equipment [NASA-CASE-LAR-10365-1] N72-27102

LOADS (FORCES)
Analysis of arm performance subjected to external
load during crank turning task [AD-739478] N72-27096

LONG TERM EFFECTS
Influence of prolonged starvation on the frequency
of occurrence of decompression-induced pulmonary
hemorrhage. A72-34545
Exchangeable potassium in heart disease -
Long-term effects of potassium supplements and

amiloride. A72-34932
Body weight decreases in some proton exposed
primates. A72-36447
Viability of staphylococci isolated from humans
subjected to long term isolation in pressurized
cabins [NLL-ETS-7117] N72-27074

LONG WAVE RADIATION
The distribution of the long wave photoreceptors
in the compound eye of the honey bee as revealed
by selective osmic staining. A72-34877

LUMINANCE
Effect of target-background luminance contrast on
binocular depth discrimination at photopic
levels of illumination. A72-34879

LUMINOUS INTENSITY
Light induced alterations in growth pattern of the
avian eye. A72-34880

LUNAR BASES
Lunar horticulture possible role as life support
system of earth independent lunar colony A72-35938

LUNAR ENVIRONMENT
Performance of Apollo portable life support system
on lunar mission N72-27110

LUNAR ROCKS
Effect of lunar ground on radiation damage in mice A72-35214

LUNAR SOIL
Analysis of vegetable seedlings grown in contact
with Apollo 14 lunar surface fines. A72-35925

LUNGS
Effects of vagotomy and increased blood pressure
on the incidence of decompression-induced
pulmonary hemorrhage. A72-36446
Role of the autonomic nervous system in the
hypoxic response of the pulmonary vascular bed. A72-36572
Rat pulmonary lipid metabolism during feeding and
fasting from studies of lung lecithin half life
after C-14/1/palmitate and H-3/U/glucose injection A72-36573

LYMPHOCYTES
Stress and adaptation responses to repeated acute
acceleration. A72-34729

M

MAGNETIC EFFECTS
Russian book - Effect of magnetic fields on
biological objects A72-35001
Physical phenomena occurring in living objects
under the action of constant magnetic fields A72-35002
Magnetic field effects in enzymes, tissue
respiration and some metabolism characteristics
of an intact organism A72-35003
Effects of magnetic fields on microorganisms A72-35004
Mechanism of the biological action of a constant
magnetic field A72-35005
Action of a constant magnetic field on plant growth A72-35006
Influence of a magnetic field on radiation-induced
chromosome aberrations in plants A72-35007
Pathologo-anatomic characterization of changes
induced by magnetic fields in experimental animals A72-35008
The magnetic field, infection and immunity A72-35009
Effect of a magnetic field on the nervous system A72-35010
Effect of a magnetic field on experimental tumors
/direct and via nervous system/ A72-35011

SUBJECT INDEX

MICROORGANISMS

- Clinical hygienic and experimental data on magnetic field effects under working conditions
A72-35012
- Methodical and methodological characteristics of a magneto-biological experiment
A72-35013
- MAGNETIC FIELDS**
- Russian book - Effect of magnetic fields on biological objects
A72-35001
- Mechanism of the biological action of a constant magnetic field
A72-35005
- Physiological and psychological effects of low and high magnetic fields on man
[NASA-CR-127049]
N72-26055
- MAN MACHINE SYSTEMS**
- Man machine systems and control, and engineering psychology
[JPBS-56297]
N72-26084
- Determination of optimal work-rest cycles for individuals and crews to yield high performance and maximum man machine effectiveness
[AD-738916]
N72-26087
- Behavior of man in technical, and socioeconomic control systems
N72-26194
- MANEUVERS**
- Experimental investigation of an astronaut maneuvering scheme.
A72-37026
- MANNED SPACE FLIGHT**
- Brief survey of the problems of space radiobiology and radiation safety in space flights.
A72-35376
- Conferences on biophysical approaches to solving problems of ionizing and nonionizing radiation effects during high altitude flight, manned space flight, and ground based equipment
[AGARD-CP-95-PT-3]
N72-26045
- Passive dosimetry for measuring cosmic radiation dosage and its effects during manned space flight
N72-26048
- Regenerative portable life support system development for extravehicular human activities during advanced space missions
N72-27113
- Carbon dioxide- and thermal-control in regenerative life support system for extravehicular human protection during advanced space missions
N72-27114
- MASKS**
- Operational performance of pneumatic seal-type facemask design
N72-27130
- MATHEMATICAL MODELS**
- Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system
A72-35972
- Mathematical models for flow ejection and aorta pressures based on displacement ballistocardiography and time dependent incompressible flow theories respectively
A72-36035
- Mathematical methods for improving the significance of scintigrams
A72-36425
- A stochastic bioburden model for spacecraft sterilization.
A72-36442
- An analytical description of the line element in the zone-fluctuation model of colour vision. I, II.
A72-36606
- Dynamics of dissolution of gas bubbles or pockets in tissues.
A72-37027
- Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model.
A72-37028
- Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure
A72-37220
- Physical models for visual - vestibular interactions in simulating human nystagmic eye movements
[AD-737795]
N72-27090
- Control system analysis for mathematical modeling of respiratory protective devices
N72-27128
- MEDICAL ELECTRONICS**
- Considerations in the design of an automatic visual field tester.
A72-37013
- Needle type solid state detectors for in vivo measurement of tracer activity.
A72-37194
- MEDICAL SCIENCE**
- Clinical observations as a research method in physiology
A72-35017
- Pigs role as ideal experimental animal in human biomedical research, discussing investigations to emphasize similarities
A72-36440
- Research in agriculture, computers and cybernetics, medicine, and electronics
[JPBS-56202]
N72-26061
- Medical aspects of human cold acclimatization during stay in polar regions
[JPBS-56225]
N72-26062
- MEMBRANES**
- Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects.
A72-36569
- MENTAL PERFORMANCE**
- Frontal cerebrum region and elementary mental activity
A72-36400
- Manipulation of projected afterimages by means of the physiological theory imposed on the observer.
A72-36920
- METABOLISM**
- Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air.
A72-34728
- The uptake, metabolism and release of C/14/-taurine by rat retina in vitro.
A72-34881
- Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1.
A72-34976
- Normal and hypoxic myocardium mitochondrial metabolism process, studying electron transport system
A72-34978
- The influence of exogenous ATP on cardiac metabolism in acute hypoxia.
A72-34987
- Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism
A72-35003
- METAL IONS**
- Biomembrane hydration mechanism of Na-K ion pump of living cell based on fractionation at air-sea interface
A72-36441
- MICROANALYSIS**
- Acute hypoxia of the myocardium - Ultrastructural changes.
A72-34982
- Changes in energy stores in the hypoxic heart.
A72-34985
- Morphological alterations in the ischaemic heart.
A72-34995
- MICROBIOLOGY**
- Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique
A72-36313
- MICROORGANISMS**
- Effects of magnetic fields on microorganisms
A72-35004
- Microbial analysis of television camera retrieved from Surveyor 3 spacecraft
N72-26768
- Microbiological assay of electric wire bundle from Surveyor 3 spacecraft
N72-26769
- Results of studies on microorganisms with direct bearing on space biology
[NASA-TT-P-14307]
N72-27081

MICROWAVES

SUBJECT INDEX

MICROWAVES

- Microwave radiation - Biophysical considerations and standards criteria. A72-34299
- Observations on microwave hazards to USAF personnel. A72-36522

MINES (EXCAVATIONS)

- Effectiveness and limitations of current portable oxygen breathing equipment for mine rescue operations. A72-27107
- Design of auxiliary survival shelter as portable life support system in mines. A72-27115

MITOCHONDRIA

- Normal and hypoxic myocardium mitochondrial metabolism process, studying electron transport system. A72-34978
- Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
- Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. A72-34993

MOLECULAR DIFFUSION

- Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects. A72-36569

MOLECULAR STRUCTURE

- Freeze etching techniques in electron microscopic investigations of biological cells molecular structure. A72-36829

MONKEYS

- Vestibular-ocular counterroll reflex for determining vestibular response dynamics of monkeys to acceleration [AD-737828]. A72-27094

MONOTONE FUNCTIONS

- Non-monotonicity of temporal recognition of brief duration. A72-36912

MORPHOLOGY

- New experimental data on the morpho-physiological analysis of the adaptation phenomenon in the somatic reflex arch. A72-35023

MOTIVATION

- Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911

MOUNTAIN INHABITANTS

- Ventilatory peripheral chemoreflex response to hypoxia during physical exercise in native highlanders and altitude-acclimated lowlanders. A72-34345
- Pulmonary gas exchange in Andean natives at high altitude. A72-36570

MOUNTAINS

- Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas. A72-34434

MUSCULAR FUNCTION

- Increase in skeletal muscle performance during emotional stress in man. A72-34982
- Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility. A72-34996
- Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny. A72-35022
- Servo action in human voluntary movement. A72-36999
- Multichannel bioelectric control system for simulating neuromuscular movements and treating motor function disturbances [NRC-TT-1552]. A72-27134

MUSCULOSKELETAL SYSTEM

- Increase in skeletal muscle performance during emotional stress in man. A72-34942

MUTATIONS

- Space flight effects on chlorella cell survival and mutability in Zond automatic stations. A72-35278
- Soyuz 5 satellite vehicle space flight factors effect on chlorella cells, investigating survival rates and mutability. A72-35279

MYOCARDIUM

- Myocardial lipid and carbohydrate metabolism in fasting men during prolonged exercise. A72-34347
- Thyroidal influence on myocardial changes induced by simulated high altitude. A72-34730
- Normal and hypoxic myocardium mitochondrial metabolism process, studying electron transport system. A72-34978
- Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- Acute myocardial anoxia - Anatomical changes and their possible relation to immunological processes. A72-34981
- Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
- Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes. A72-34983
- Changes of intracellular myocardial electrolytes in experimental hypertension. A72-34984
- The intramyocardial oxygen pressure at normoxia and hypoxia. A72-34986
- Myocardial ultrastructure in acute and chronic hypoxia. A72-34988
- Myocardial metabolic changes in chronic hypoxia. A72-34989
- Anoxic tolerance of the heart muscle in different types of chronic hypoxia. A72-34991
- Ion alterations during myocardial ischemia. A72-34994
- Morphological alterations in the ischaemic heart. A72-34995
- Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility. A72-34996
- Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction. A72-34997
- Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise. A72-35968

MYOGLOBIN

- Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects. A72-36569

N

NAVY

- Navy research and instrumentation for analyzing nonionizing radiation effects on human personnel. A72-26054

NECK (ANATOMY)

- Neck cooling collar for improved thermal comfort in hot weather. A72-27126

NERVES

- Acquired complete right bundle branch block without overt cardiac disease. Clinical and hemodynamic study of 37 patients. A72-35821
- Effects of vagotomy and increased blood pressure on the incidence of decompression-induced pulmonary hemorrhage. A72-36446

NERVOUS SYSTEM

- Effect of a magnetic field on experimental tumors

- /direct and via nervous system/ A72-35011
 New experimental data on the morpho-physiological analysis of the adaptation phenomenon in the somatic reflex arch A72-35023
 Vasomotor reflex locking level A72-35025
- NEUROMUSCULAR TRANSMISSION**
 Bioelectric system for control of muscular activity [NRC-TT-1551] N72-27083
 Multichannel bioelectric control system for simulating neuromuscular movements and treating motor function disturbances [NRC-TT-1552] N72-27134
- NEURONS**
 Sperry neuronal specificity hypothesis for nerve cell connections formation between eye and brain during embryonic development, proposing systems matching theory A72-35070
- NEUROPHYSIOLOGY**
 Evidence for the role of the transient neural 'off-response' in perception of light decrement - A psychophysical test derived from neuronal data in the cat. A72-34884
 New experimental data on the morpho-physiological analysis of the adaptation phenomenon in the somatic reflex arch A72-35023
 Bioelectric activity of the medulla oblongata during hypothermia and bloodletting A72-35024
 Neuroinhibition in the regulation of emesis. A72-36449
- NEUROSES**
 Extraversion, neuroticism, and color preferences. A72-36903
- NICOTINIC ACID**
 Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise. A72-35968
- NITROGEN**
 Regression analysis for steady state N2 inequality in O2 consumption calculations. A72-34542
 Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr. A72-34544
- NITROUS OXIDES**
 Gas induced osmosis as factor in pulmonary homeostasis, showing differential water retention in lungs ventilated with normoxic nitrous oxide compared with air A72-35970
- NOISE (SOUND)**
 Effects of noise and illumination on human motor performance [AD-739474] N72-27095
 Effect of noise and temperature on human performance of simple manual dexterity task [AD-739432] N72-27097
- NOISE INTENSITY**
 Tests of broadband high intensity noise on human equilibrium [AD-737826] N72-27093
- NOISE POLLUTION**
 Social survey of annoyance caused by aircraft and road traffic noise [TT-7204] N72-26082
- NOISE TOLERANCE**
 Social survey of annoyance caused by aircraft and road traffic noise [TT-7204] N72-26082
- NONLINEAR SYSTEMS**
 Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. A72-37028
- NUCLEAR EXPLOSIONS**
 Human eardrum rupture and hearing loss injuries from nuclear explosions [AD-737643] N72-27092
- NUCLEAR RADIATION**
 Needle type solid state detectors for in vivo measurement of tracer activity. A72-37194
- NUCLEIC ACIDS**
 Role of the synthesis of nucleic acids and proteins in the adaptation of the organism to altitude hypoxia. A72-34990
- NYSTAGMUS**
 Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34554
 Physical models for visual - vestibular interactions in simulating human nystagmic eye movements [AD-737795] N72-27090
 Vestibular-ocular counterroll reflex for determining vestibular response dynamics of monkeys to acceleration [AD-737828] N72-27094
-
- OCCIPITAL LOBES**
 Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions. A72-34247
- OCEANOGRAPHY**
 Biological resources of Chesapeake Bay and measurement of chemical, physical, and meteorological features to improve resources management N72-26278
- OCULOMOTOR NERVES**
 Otolith organ response of normal vision people and persons with severe bilateral labyrinthine function loss exposed to prolonged tilt [NASA-CR-127034] N72-26058
- ON-LINE PROGRAMMING**
 Modifying Siegel-Wolf operator simulation model for on-line operation [AD-737798] N72-27138
- OPERATOR PERFORMANCE**
 Human operator errors in performing audio-video and audio only tracking tasks N72-26078
 Nonlinear oscillatory system models for representation of reactions of human operators to harmonic and random vibrational action [NASA-TT-P-14289] N72-26085
 Modifying Siegel-Wolf operator simulation model for on-line operation [AD-737798] N72-27138
- OPERATORS (PERSONNEL)**
 Safety codes for operators using laser equipment N72-26057
- OPTICAL ILLUSION**
 On the apparent orbit of the Pulfrich pendulum. A72-36608
 Division and orientation in the vertical-horizontal illusion. A72-36913
- OPTICAL TRACKING**
 Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34554
- OPTIMAL CONTROL**
 Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique A72-36313
- ORGANIC CHEMISTRY**
 Chemical evolution and the origin of life - Bibliography supplement 1970. A72-36450
- ORGANS**
 A new model for estimating space proton dose to body organs. A72-35354
- OSMIUM COMPOUNDS**
 The distribution of the long wave photoreceptors in the compound eye of the honey bee as revealed by selective osmic staining. A72-34877
- OSMOSIS**
 Influence of hyperosmolality on left ventricular stiffness. A72-34727

OTOLITH ORGANS

SUBJECT INDEX

Influence of thermal, osmotic, and chemical stimulations on food and water intake
A72-35016

Gas induced osmosis as factor in pulmonary homeostasis, showing differential water retention in lungs ventilated with normoxic nitrous oxide compared with air
A72-35970

OTOLITH ORGANS
Otolith organ response of normal vision people and persons with severe bilateral labyrinthine function loss exposed to prolonged tilt [NASA-CR-127034]
N72-26058

OXIDIZERS
Spacecraft trace contaminant control system with presorbers and postsorbers for catalytic oxidizer [NASA-CR-2027]
N72-26079

OXYGEN
Oxygen saturation of human blood during prolonged stay in Antarctic region
N72-26069

OXYGEN BREATHING
Hemodynamic changes in man during immersion with the head above water.
A72-34543

Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids.
A72-34553

USAF custom fit oxygen mask program.
A72-34559

OXYGEN CONSUMPTION
Regression analysis for steady state N2 inequality in O2 consumption calculations.
A72-34542

Cell proliferation in lungs of mice exposed to elevated concentrations of oxygen.
A72-34548

Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air.
A72-34728

Ion alterations during myocardial ischemia.
A72-34994

Thermoregulation during positive and negative work at different environmental temperatures.
A72-36559

Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration.
A72-36911

OXYGEN MASKS
USAF custom fit oxygen mask program.
A72-34559

Continuous flow general aviation oxygen masks.
[SAE AS 1224]
A72-36536

OXYGEN METABOLISM
Myocardial metabolic changes in chronic hypoxia.
A72-34989

Blood oxygenating ability of helium- and argon-oxygen environments relative to air, using alveolar gas equation to predict arterial oxygen pressure
A72-36438

Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion
A72-37030

OXYGEN PRODUCTION
Catalytic effect of cobalt powder on sodium chlorate candles as source of oxygen
N72-27131

OXYGEN SUPPLY EQUIPMENT
Conference on portable life support systems for human protection
[NASA-SP-302]
N72-27106

Effectiveness and limitations of current portable oxygen breathing equipment for mine rescue operations
N72-27107

Portable breathing apparatus containing chlorate candle oxygen source for mine rescue operations
N72-27112

Modified Apollo portable life support system for Skylab astronauts
N72-27117

Catalytic effect of cobalt powder on sodium chlorate candles as source of oxygen
N72-27131

OXYGEN TENSION
The intramyocardial oxygen pressure at normoxia

and hypoxia.
A72-34986

Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status.
A72-35166

Respiratory frequency and alveolar oxygen and carbon dioxide tension relationship to hypercapnia in man
A72-35965

Effects of diffusion impairment on O2 and CO2 time courses in pulmonary capillaries.
A72-35967

Blood oxygenating ability of helium- and argon-oxygen environments relative to air, using alveolar gas equation to predict arterial oxygen pressure
A72-36438

Pulmonary gas exchange in Andean natives at high altitude.
A72-36570

OXYGENATION
Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects.
A72-36569

P

PAIN SENSITIVITY
Vicarious influence effect on eliciting pain in individuals subjected to previously reported nonpainful electric shocks
A72-36916

PARALLAX
Visual depth perception response functions for sine and square wave modulated binocular parallax
A72-34293

PARTICLE ACCELERATION
Effects of accelerated particles and cosmic rays on light flashes in human eye
[NASA-TN-X-68460]
N72-26051

PATHOLOGICAL EFFECTS
Myocardial protein synthesis in acute myocardial hypoxia and ischemia.
A72-34980

Pathologic-anatomic characterization of changes induced by magnetic fields in experimental animals
A72-35008

Neuropathological evaluation of monkeys exposed to body-alone X-radiation.
A72-36439

Reflex and conditional movement observation of central nervous system function restitution in Macaca mulatta monkeys with cortical lesions, studying pathological forced grasping
A72-36977

Biological models for clinical analysis of pulmonary circulation during simulated abnormal pathological or environmental conditions
[NASA-CR-127111]
N72-26044

PATTERN RECOGNITION
Perception of tachistoscopic binary patterns, examining reproduction accuracy with respect to pattern length and fixation and end-segregation reference points
A72-36914

Effect of set size, age, and mode of stimulus presentation on information-processing speed.
A72-36922

PENDULUMS
On the apparent orbit of the Pulfrich pendulum.
A72-36608

PERCEPTION
Developmental relationships between field independence and fixity-mobility.
A72-36906

PERCEPTUAL TIME CONSTANT
Non-monotonicity of temporal recognition of brief duration.
A72-36912

PERFORMANCE TESTS
Performance measurement in helicopter training and operations.
[PP-10-72]
A72-35550

Performance of closed circuit mixed gas underwater breathing apparatus
N72-27119

PERSONALITY TESTS
Personality correlates of lateral eye movement and handedness.

SUBJECT INDEX

PHYSIOLOGICAL EFFECTS

- PERSONNEL** A72-36905
Navy research and instrumentation for analyzing nonionizing radiation effects on human personnel N72-26054
- PHARMACOLOGY**
Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATP-ase activity of rat tissue microsomes. A72-34546
Pharmacological effects on the central adrenergic regulation mechanisms of blood circulation A72-35019
The effect of chlorthalidone on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man. A72-35915
Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
Apparatus for programmed oral administration of drugs to large primates in altered environments. A72-36921
- PHASE SHIFT**
Hue shifts accompany phase induced modulation enhancement of sinusoidally flickering lights. A72-36613
- PHOSPHATES**
Changes in energy stores in the hypoxic heart. A72-34985
Rat pulmonary lipid metabolism during feeding and fasting from studies of lung lecithin half life after C-14/1-palmitate and H-3/U-glucose injection A72-36573
Cholinesterase methods for assaying pesticide poisoning in blood of aerial applicator personnel [FAA-AH-72-12] N72-27080
- PHOTON-ELECTRON INTERACTION**
Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea. A72-35761
- PHOTORECEPTORS**
The distribution of the long wave photoreceptors in the compound eye of the honey bee as revealed by selective osmic staining. A72-34877
Electroretinographic evidence for a photopic system in the rat. A72-34878
Fly colour vision. A72-36609
- PHOTOSENSITIVITY**
Colorimetric photometric matching tests, showing subject differences in parafoveal spectral sensitivity indicated by photopic curve peaks A72-34882
- PHOTOSYNTHESIS**
Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea. A72-35761
Photosynthesis and photovoltaic technology N72-27060
- PHOTOVOLTAIC EFFECT**
Photosynthesis and photovoltaic technology N72-27060
- PHYSICAL EXERCISE**
Ventilatory peripheral chemoreflex response to hypoxia during physical exercise in native highlanders and altitude-acclimated lowlanders A72-34345
Myocardial lipid and carbohydrate metabolism in fasting men during prolonged exercise. A72-34347
Exercise capacity in a population of domestic fowl - Effects of selection and training. A72-34726
Work capacity and physiological responses to maximum exercise in 54 year old men in relation to heart disease and cardiovascular hazard studies A72-35822
Hemodynamic thermoregulatory and sympathoadrenal responses to heat acclimatization in man during supine and upright position exercise A72-35963
- Bradycardia diving reflex to apneic face immersion related to physical exercise A72-35964
Disproportional changes in hematocrit, plasma volume, and proteins during exercise and bed rest. A72-35966
Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise. A72-35968
Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients. A72-36034
Fluid transfer between blood and tissues during exercise. A72-36560
- PHYSICAL FITNESS**
Exercise capacity in a population of domestic fowl - Effects of selection and training. A72-34726
Heart rate monitor for indicating physical fitness level in individuals [AD-738882] N72-26088
- PHYSICAL WORK**
Possibilities and dangers during long working periods in space rescue. A72-34436
Natural acclimatization to work in severe heat. A72-34550
Thermoregulation during positive and negative work at different environmental temperatures. A72-36559
Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911
- PHYSIOLOGICAL ACCELERATION**
Synchronous and asynchronous BASH /body acceleration synchronous with heart beat/ effects on hemodynamics and ventilation in dogs and humans A72-36033
- PHYSIOLOGICAL EFFECTS**
Blood coagulation changes at high altitude predisposing to pulmonary hypertension. A72-34222
Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr. A72-34544
Effects of combined O-G simulation and hypergravity on eggs of the nematode, Ascaris suum. A72-34547
Cell proliferation in lungs of mice exposed to elevated concentrations of oxygen. A72-34548
Exercise capacity in a population of domestic fowl - Effects of selection and training. A72-34726
Influence of hyperosmolality on left ventricular stiffness. A72-34727
Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air. A72-34728
The effect of target contrast variation on dynamic visual acuity and eye movements. A72-34876
Light induced alterations in growth pattern of the avian eye. A72-34880
The effects of acute hypoxia on lipid synthesis in the rat heart. A72-34979
Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. A72-34993
Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility. A72-34996
Physical phenomena occurring in living objects under the action of constant magnetic fields A72-35002
The magnetic field, infection and immunity A72-35009

PHYSIOLOGICAL FACTORS

SUBJECT INDEX

- Effect of a magnetic field on the nervous system
A72-35010
- Pharmacological effects on the central adrenergic
regulation mechanisms of blood circulation
A72-35019
- Bioelectric activity of the medulla oblongata
during hypothermia and bloodletting
A72-35024
- Increased tolerance of leukemic mice to arabinosyl
cytosine with schedule adjusted to circadian
system.
A72-35397
- The effect of chlordiazepoxide on visual field,
extraocular muscle balance, colour matching
ability and hand-eye co-ordination in man.
A72-35915
- Effects of vagotomy and increased blood pressure
on the incidence of decompression-induced
pulmonary hemorrhage.
A72-36446
- Body weight decreases in some proton exposed
primates.
A72-36447
- Observations on microwave hazards to USAF personnel.
A72-36522
- Physiological and psychological effects of low and
high magnetic fields on man
[NASA-CR-127049]
A72-26055
- Nonlinear deformation of intervertebral discs in
human spine when subjected to shock loads
involving axial compressive impact
A72-26857
- PHYSIOLOGICAL FACTORS**
- Airline management and flight crew role in
prevention, detection and dealing with airline
pilot incapacitation in flight, noting
physiological and psychological factor recognition
A72-34555
- Habitability factors in a rotating space station.
A72-36436
- PHYSIOLOGICAL RESPONSES**
- Simulation of the human cardiovascular system - A
model with normal responses to change of
posture, blood loss, transfusion, and autonomic
blockade.
A72-34445
- Vestibular behavior of fish during diminished
g-force and weightlessness.
A72-34549
- Natural acclimatization to work in severe heat.
A72-34550
- Heat, noise and vibration stress combined effects
on skin and rectal temperature, heart rate,
weight loss and biochemical urinalysis
A72-34551
- Stress and adaptation responses to repeated acute
acceleration.
A72-34729
- Linear-nonlinear-linear transition as a function.
of frequency in the retinal response to light.
A72-34885
- Changes of intracellular myocardial electrolytes
in experimental hypertension.
A72-34984
- Ion alterations during myocardial ischemia.
A72-34994
- Influence of thermal, osmotic, and chemical
stimulations on food and water intake
A72-35016
- New data on physiological adaptations to arid zones
A72-35021
- Russian book - Intracranial blood circulation
under conditions of accelerations and
weightlessness
A72-35460
- Work capacity and physiological responses to
maximum exercise in 54 year old men in relation
to heart disease and cardiovascular hazard studies
A72-35822
- Functional development of the altitude convulsion
mechanism in mice and rabbits /Research note/.
A72-36445
- Role of the autonomic nervous system in the
hypoxic response of the pulmonary vascular bed.
A72-36572
- Optokinetic thresholds in the normal monkey.
A72-36610
- Clinical evaluation of human physiological
acclimatization processes in Antarctica
A72-26064
- Physiological characteristics of human cold
acclimatization in Antarctica
A72-26065
- Effects of high intensity anticollision light
pulses on physiological responses of instrument
rated pilots and non-pilots
[FAA-AE-72-8]
A72-26072
- PHYSIOLOGICAL TESTS**
- Effects of instructions on measures of state and
trait anxiety in flight students.
A72-34464
- Rhesus monkey retinas ultrastructural alteration
and damage in rods and cones produced by Q
switched ruby laser coherent radiation
A72-35396
- PHYSIOLOGY**
- Russian book - Mechanisms regulating physiological
functions
A72-35014
- Clinical observations as a research method in
physiology
A72-35017
- PIGMENTS**
- The distribution of the long wave photoreceptors
in the compound eye of the honey bee as revealed
by selective osmic staining.
A72-34877
- Electroretinographic evidence for a photopic
system in the rat.
A72-34878
- Fly colour vision.
A72-36609
- PILE FOUNDATIONS**
- Portable air supply and monitoring system for
personnel working on offshore platform piling
A72-27123
- PILOT ERROR**
- Grouping of the causative factors in investigation
of aircraft accidents attributed to pilot errors.
A72-34557
- Pilot steering error in simulated instrument
flight approach to terminal area
[AD-739309]
A72-27085
- PILOT PERFORMANCE**
- Airline management and flight crew role in
prevention, detection and dealing with airline
pilot incapacitation in flight, noting
physiological and psychological factor recognition
A72-34555
- Performance measurement in helicopter training and
operations.
[PP-10-72]
A72-35550
- Congruent and spurious motion in the learning and
performance of a compensatory tracking task.
A72-35692
- Pilot performance and reaction time in response to
auditory signals during low level helicopter
flight
[ISVR-TR-54]
A72-26086
- PILOT TRAINING**
- Performance measurement in helicopter training and
operations.
[PP-10-72]
A72-35550
- Congruent and spurious motion in the learning and
performance of a compensatory tracking task.
A72-35692
- PLANETARY QUARANTINE**
- Planetary quarantine bibliography
[NASA-CR-127112]
A72-26074
- PLANETARY RADIATION**
- Brief survey of the problems of space radiobiology
and radiation safety in space flights.
A72-35376
- PLANTS (BOTANY)**
- Action of a constant magnetic field on plant growth
A72-35006
- PNEUMATIC CONTROL**
- Operational performance of pneumatic seal-type
face mask design
A72-27130
- POISONS**
- Photon trapping in photosystem II of
photosynthesis - The fluorescence rise curve in
the presence of
3-/3,4-dichlorophenyl/-1,1-dimethylurea.
A72-35761
- POLAR REGIONS**
- Some aspects of survival and rescue of astronauts

SUBJECT INDEX

PROTEIN METABOLISM

in polar regions. A72-34435

Biomedical data reports on human acclimatization to polar regions and psychophysiology [JPRS-56252] N72-26060

Medical aspects of human cold acclimatization during stay in polar regions [JPRS-56225] N72-26062

POROUS MATERIALS

Compressible electrolyte saturated sponge electrode for biomedical applications [NASA-CASE-MSC-13648] N72-27103

PORTABLE EQUIPMENT

Effectiveness and limitations of current portable oxygen breathing equipment for mine rescue operations N72-27107

PORTABLE LIFE SUPPORT SYSTEMS

Conference on portable life support systems for human protection [NASA-SP-302] N72-27106

Design of gas mixture breathing systems for underwater diver equipment N72-27108

Portable life support system for astronaut working outside of lunar module N72-27109

Performance of Apollo portable life support system on lunar mission N72-27110

Portable life support system for protective fully enclosed suits of shipboard personnel N72-27111

Portable breathing apparatus containing chlorate candle oxygen source for mine rescue operations N72-27112

Regenerative portable life support system development for extravehicular human activities during advanced space missions N72-27113

Carbon dioxide- and thermal-control in regenerative life support system for extravehicular human protection during advanced space missions N72-27114

Design of auxiliary survival shelter as portable life support system in mines N72-27115

Design of portable decompression chamber with semiclosed gas recirculation system for treating underwater divers N72-27116

Modified Apollo portable life support system for Skylab astronauts N72-27117

Design of deep sea heavy duty diving equipment for salvage divers N72-27118

Performance of closed circuit mixed gas underwater breathing apparatus N72-27119

Diving suit and heat element combinations for thermal protection of underwater divers N72-27120

Performance of liquid cooled garment system inside pressure suit of pilot N72-27121

Design and performance of prototype portable heat source for providing thermal insulation in diving suit N72-27122

Portable air supply and monitoring system for personnel working on offshore platform piling N72-27123

Water cooled pressure suit with regional body cooling for metabolic heat removal N72-27124

Automatic controller of liquid cooled space suit using human sweat rate as input signal N72-27125

Neck cooling collar for improved thermal comfort in hot weather N72-27126

Operational performance of pneumatic seal-type facemask design N72-27130

POSITRON ANNIHILATION

The imaging properties of the positron camera A72-36424

POSTURE

Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade. A72-34445

POTASSIUM

Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amiloride. A72-34932

Ion alterations during myocardial ischemia. A72-34994

Active transport of Na and K ions and reaction mechanism for ATP-ase [NLL-RTS-6898] N72-27075

PRESSURE

Standardized treatment of decompression sickness occurring while diving under pressure [AD-737700] N72-27088

PRESSURE BREATHING

Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs A72-35917

PRESSURE CHAMBERS

Design of portable decompression chamber with semiclosed gas recirculation system for treating underwater divers N72-27116

PRESSURE EFFECTS

Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system A72-35972

PRESSURE MEASUREMENTS

Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. A72-34298

PRESSURE SUITS

Conference on portable life support systems for human protection [NASA-SP-302] N72-27106

Portable life support system for protective fully enclosed suits of shipboard personnel N72-27111

Diving suit and heat element combinations for thermal protection of underwater divers N72-27120

Performance of liquid cooled garment system inside pressure suit of pilot N72-27121

Design and performance of prototype portable heat source for providing thermal insulation in diving suit N72-27122

Water cooled pressure suit with regional body cooling for metabolic heat removal N72-27124

PRESSURIZED CABINS

Viability of staphylococci isolated from humans subjected to long term isolation in pressurized cabins [NLL-RTS-7117] N72-27074

PROSTHETIC DEVICES

Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation. A72-34221

PROTECTIVE CLOTHING

Physiological evaluation of thermal insulation properties of camel hair suits for human Arctic stay N72-26071

Steady state and transient temperature distributions in human thigh covered with cooling pad [NASA-CR-127523] N72-27084

Inflatable, thermally insulative emergency survival suit for subzero weather N72-27132

PROTEIN METABOLISM

Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980

Disproportional changes in hematocrit, plasma volume, and proteins during exercise and bed rest. A72-35966

PROTEINS

Hypoxic theory for atherosclerosis formation, noting blood plasma protein concentration effects on oxygen diffusion

A72-37030

PROTEINS

Role of the synthesis of nucleic acids and proteins in the adaptation of the organism to altitude hypoxia.

A72-34990

PROTON IRRADIATION

Brain tumors in irradiated monkeys.

A72-35647

Body weight decreases in some proton exposed primates.

A72-36447

PROTOTYPES

Passive dosimetric interpretation of cosmic radiation dose rate onboard French prototype of Concorde 001 supersonic transport aircraft

N72-26052

PSYCHOLOGICAL EFFECTS

Vicarious influence effect on eliciting pain in individuals subjected to previously reported nonpainful electric shocks

A72-36916

Physiological and psychological effects of low and high magnetic fields on man [NASA-CR-127049]

N72-26055

PSYCHOLOGICAL FACTORS

Effects of instructions on measures of state and trait anxiety in flight students.

A72-34464

Airline management and flight crew role in prevention, detection and dealing with airline pilot incapacitation in flight, noting physiological and psychological factor recognition

A72-35555

Obedience to rotation-indicating visual displays as a function of confidence in the displays.

A72-35943

Extraversion, neuroticism, and color preferences.

A72-36903

Experimental tests of Voth-Mayman hypothesis of autokinesia mediation by attention distribution mechanism

A72-36904

Personality correlates of lateral eye movement and handedness.

A72-36905

Error arising from experimenter influence on subject behavior and performance, discussing expectancy effects on stimulus presentation and IQ and success-failure judgments

A72-36907

Repression-sensitization and duration of visual attention.

A72-36917

Manipulation of projected afterimages by means of the physiological theory imposed on the observer.

A72-36920

Behavior of man in technical, and socioeconomic control systems

N72-26194

PSYCHOLOGICAL TESTS

Visual-tactual senses conflict experimental examination, discussing vision as dominant modality

A72-34249

Developmental relationships between field independence and fixity-mobility.

A72-36906

Psychological tests to judge maximum and minimum nonphysical subjective attraction forces between two parallel bars

A72-36919

PSYCHOLOGY

Man machine systems and control, and engineering psychology [JPRS-56297]

N72-26084

PSYCHOMOTOR PERFORMANCE

Vestibular behavior of fish during diminished g-force and weightlessness.

A72-34549

Increase in skeletal muscle performance during emotional stress in man.

A72-34942

PSYCHOPHYSICS

Evidence for the role of the transient neural 'off-response' in perception of light decrement

SUBJECT INDEX

- A psychophysical test derived from neuronal data in the cat.

A72-34884

Determining the detectability range of camouflaged targets.

A72-35690

PSYCHOPHYSIOLOGY

Biomedical data reports on human acclimatization to polar regions and psychophysiology [JPRS-56252]

N72-26060

Psychophysiological factors of human adaptation to Antarctic life

N72-26066

Human factors engineering viewpoint of psychophysiological measurements applied to maintainability evaluation of equipment design [AD-739437]

N72-27137

PULMONARY CIRCULATION

Blood coagulation changes at high altitude predisposing to pulmonary hypertension.

A72-34222

Effects of diffusion impairment on O2 and CO2 time courses in pulmonary capillaries.

A72-35967

Mathematical model for flow limitation in collapsible tube in relation to pressure in pulmonary and circulatory system

A72-35972

A model of fluctuating alveolar gas exchange during the respiratory cycle.

A72-36571

Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed.

A72-36572

Biological models for clinical analysis of pulmonary circulation during simulated abnormal pathological or environmental conditions [NASA-CR-127111]

N72-26044

PULMONARY FUNCTIONS

Rebreathing studies of carbon dioxide pressure level effect on carbon dioxide content difference in arterial blood and alveolar gas during exercise and rest

A72-34346

Respiratory frequency and alveolar oxygen and carbon dioxide tension relationship to hypercapnia in man

A72-35965

Gas induced osmosis as factor in pulmonary homeostasis, showing differential water retention in lungs ventilated with normoxic nitrous oxide compared with air

A72-35970

Pulmonary gas exchange in Andean natives at high altitude.

A72-36570

Rat pulmonary lipid metabolism during feeding and fasting from studies of lung lecithin half life after C-14/1/palmitate and H-3/0/glucose injection

A72-36573

Spirographic examination of human pulmonary functions during stay in Antarctica

N72-26070

PULMONARY LESIONS

Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr.

A72-34544

Influence of prolonged starvation on the frequency of occurrence of decompression-induced pulmonary hemorrhage.

A72-34545

PULSE DURATION

Effects of accelerated particles and cosmic rays on light flashes in human eye [NASA-TM-X-68460]

N72-26051

PURSUIT TRACKING

Eye movement pattern monitoring to investigate retinal afterimage role in release of pursuit movements

A72-34886

Rotary pursuit task practice effects on transfer of motor skill from slower to faster speeds

A72-36915

R

RADAR DETECTION

Time-compressed displays for target detection.

A72-35945

RADAR EQUIPMENT

Biological effects of UHF electromagnetic radar emissions on human organism

N72-26053

RADAR IMAGERY

Recent research applicable to the design of electronic displays.

A72-36902

RADARSCOPES

Time-compressed displays for target detection.

A72-35945

RADIATION DAMAGE

Effect of lunar ground on radiation damage in mice

A72-35214

Rhesus monkey retinas ultrastructural alteration and damage in rods and cones produced by Q switched ruby laser coherent radiation

A72-35396

Brain tumors in irradiated monkeys.

A72-35647

Ophthalmologic examinations for determining retina damage caused by helium-neon laser boresights [AD-738629]

N72-27087

RADIATION DETECTORS

Mathematical methods for improving the significance of scintigrams

A72-36425

RADIATION DOSAGE

A new model for estimating space proton dose to body organs.

A72-35354

Neuropathological evaluation of monkeys exposed to body-alone X-radiation.

A72-36439

The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters.

A72-37197

Passive dosimetry for measuring cosmic radiation dosage and its effects during manned space flight

N72-26048

Passive dosimetric interpretation of cosmic radiation dose rate onboard French prototype of Concorde 001 supersonic transport aircraft

N72-26052

RADIATION EFFECTS

Influence of a magnetic field on radiation-induced chromosome aberrations in plants

A72-35007

Body weight decreases in some proton exposed primates.

A72-36447

Conferences on biophysical approaches to solving problems of ionizing and nonionizing radiation effects during high altitude flight, manned space flight, and ground based equipment [AGARD-CP-95-PT-3]

N72-26045

Biological effects of UHF electromagnetic radar emissions on human organism

N72-26053

Navy research and instrumentation for analyzing nonionizing radiation effects on human personnel

N72-26054

RADIATION HAZARDS

Microwave radiation - Biophysical considerations and standards criteria.

A72-34299

Observations on microwave hazards to USAF personnel.

A72-36522

RADIATION INJURIES

Visible and invisible nonionizing radiation produced human injuries, considering visual and retinal effects and induced thermal stresses

A72-34300

Neuropathological evaluation of monkeys exposed to body-alone X-radiation.

A72-36439

Naval research on laser caused visual acuity decrement in monkeys and ocular injury in humans

N72-26056

Safety codes for operators using laser equipment

N72-26057

RADIATION MEASURING INSTRUMENTS

Navy research and instrumentation for analyzing nonionizing radiation effects on human personnel

N72-26054

RADIATION PROTECTION

Brief survey of the problems of space radiobiology

and radiation safety in space flights.

A72-35376

The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters.

A72-37197

Active dosimetry for protection and control of cosmic rays in supersonic aircraft

N72-26047

Research in developing improved radiation protection programs [JUL-787-ST]

N72-26075

RADIOACTIVE CONTAMINANTS

The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters.

A72-37197

RADIOBIOLOGY

Brief survey of the problems of space radiobiology and radiation safety in space flights.

A72-35376

Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds.

A72-37195

RADIOGRAPHY

Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients.

A72-36034

The imaging properties of the positron camera

A72-36424

RADIO NOISE

Time-compressed displays for target detection.

A72-35945

RANDOM VIBRATION

Nonlinear oscillatory system models for representation of reactions of human operators to harmonic and random vibrational action [NASA-TT-P-14289]

N72-26085

RAPID EYE MOVEMENT STATE

REM period functional maintenance of coordinated eye movement facilitation and binocular depth perception accuracy following sleep

A72-35462

RARE GASES

Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr.

A72-34544

REACTION TIME

Detection and recognition of colored signal lights.

A72-35691

Effect of set size, age, and mode of stimulus presentation on information-processing speed.

A72-36922

Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure

A72-37220

Pilot performance and reaction time in response to auditory signals during low level helicopter flight [ISVR-TR-54]

N72-26086

Response time to vibrotactile stimulus in relation to signal amplitude and frequency variation [AD-739433]

N72-27139

REBREATHING

Rebreathing studies of carbon dioxide pressure level effect on carbon dioxide content difference in arterial blood and alveolar gas during exercise and rest

A72-34346

RECEPTORS (PHYSIOLOGY)

Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny

A72-35022

RECORDING INSTRUMENTS

Instrument for recording position of center of gravity projection in horizontal plane [AD-739439]

N72-27136

REFLEXES

Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny

A72-35022

REGRESSION ANALYSIS

SUBJECT INDEX

- New experimental data on the morpho-physiological analysis of the adaptation phenomenon in the somatic reflex arch
A72-35023
- Vasomotor reflex locking level
A72-35025
- Reflex and conditional movement observation of central nervous system function restitution in Macaca mulatta monkeys with cortical lesions, studying pathological forced grasping
A72-36977
- REGRESSION ANALYSIS**
Regression analysis for steady state N2 inequality in O2 consumption calculations.
A72-34542
- RELATIVE BIOLOGICAL EFFECTIVENESS (RBE)**
Relative biological effects of heavy cosmic ray ions on living tissue
N72-26049
- REMOTE SENSORS**
Biological resources of Chesapeake Bay and measurement of chemical, physical, and meteorological features to improve resources management
N72-26278
- REPRODUCTION**
Natural ionizing radiation effects on multiplication of unicellular organisms and Drosophila melanogaster development
N72-26050
- RESCUE OPERATIONS**
Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas.
A72-34434
- Some aspects of survival and rescue of astronauts in polar regions.
A72-34435
- Possibilities and dangers during long working periods in space rescue.
A72-34436
- Life support system for rescue crew in altitude chamber tests
N72-27133
- RESEARCH**
Clinical observations as a research method in physiology
A72-35017
- RESEARCH AND DEVELOPMENT**
Research in developing improved radiation protection programs
[JUL-787-ST]
N72-26075
- Research in deep sea diving and lightning triggered by man
N72-27099
- RESPIRATION**
Ventilatory peripheral chemoreflex response to hypoxia during physical exercise in native highlanders and altitude-acclimated lowlanders
A72-34345
- Effects of nitrogen and helium upon pulmonary damage after rapid decompression to 2 torr.
A72-34544
- Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism
A72-35003
- Bradycardia diving reflex to apneic face immersion related to physical exercise
A72-35964
- Pulmonary gas exchange in Andean natives at high altitude.
A72-36570
- A model of fluctuating alveolar gas exchange during the respiratory cycle.
A72-36571
- Inhibitory effects of glucose on biosynthetic respiratory adaptation of protoheme by yeast
[NASA-TT-F-14330]
N72-26073
- Effects of bromotrifluoromethane inhalation and epinephrine challenge on cardiovascular system
[AD-739699]
N72-27098
- RESPIRATORY IMPEDANCE**
Human tolerance to external respiratory resistance for design of breathing apparatus
N72-27127
- Control system analysis for mathematical modeling of respiratory protective devices
N72-27128
- RESPIRATORY RATE**
Simulation and design of breathing metabolic simulator
N72-27129
- REST**
Effect of nicotinic acid on myocardial metabolism in man at rest and during exercise.
A72-35968
- RETINA**
Visible and invisible nonionizing radiation produced human injuries, considering visual and retinal effects and induced thermal stresses
A72-34300
- Gain control and contrast sensitivity in the vertebrate retina.
A72-34418
- The uptake, metabolism and release of C/14/-taurine by rat retina in vitro.
A72-34881
- Rhesus monkey retinas ultrastructural alteration and damage in rods and cones produced by Q switched ruby laser coherent radiation
A72-35396
- Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity
A72-36611
- Effects of accelerated particles and cosmic rays on light flashes in human eye
[NASA-TM-X-68460]
N72-26051
- Ophthalmologic examinations for determining retina damage caused by helium-neon laser boreights
[AD-738629]
N72-27087
- RETINAL ADAPTATION**
Electroretinographic evidence for a photopic system in the rat.
A72-34878
- Linear-nonlinear-linear transition as a function of frequency in the retinal response to light.
A72-34885
- Effect of selective adaptation on detection of simple and compound parafoveal stimuli.
A72-36607
- RETINAL IMAGES**
Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions.
A72-34247
- The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in Rana esculenta.
A72-34883
- Eye movement pattern monitoring to investigate retinal afterimage role in release of pursuit movements
A72-34886
- Peripheral contrast thresholds for moving images.
A72-35688
- Manipulation of projected afterimages by means of the physiological theory imposed on the observer.
A72-36920
- RIBONUCLEIC ACIDS**
EEG investigation of circadian variations in qualitative and quantitative RNA content in human leukocytes, noting changes during sleep
A72-36624
- ROTATING ENVIRONMENTS**
Obedience to rotation-indicating visual displays as a function of confidence in the displays.
A72-35943
- The influence of clinostat rotation on the fertilized amphibian egg.
A72-36435
- Habitability factors in a rotating space station.
A72-36436
- Gravity simulation by rotation and effects on human performance
[NASA-CR-111866]
N72-27104
- RUPTURING**
Human eardrum rupture and hearing loss injuries from nuclear explosions
[AD-737643]
N72-27092
- SAFETY DEVICES**
Some aspects of survival and rescue of astronauts in polar regions.
A72-34435

S

SAFETY MANAGEMENT

Safety codes for operators using laser equipment
N72-26057

SCINTILLATION COUNTERS

The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters.
A72-37197

SEEDS

Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment
A72-35280
Analysis of vegetable seedlings grown in contact with Apollo 14 lunar surface fines.
A72-35925

SELECTION

Exercise capacity in a population of domestic fowl - Effects of selection and training.
A72-34726

SENSITIZING

Repression-sensitization and duration of visual attention.
A72-36917

SENSORIMOTOR PERFORMANCE

Multilevel motion control
A72-35018
Behavioral properties of somatosensory-motor interhemispheric transfer.
A72-35463

The effect of chlordiazepoxide on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man.
A72-35915

Rotary pursuit task practice effects on transfer of motor skill from slower to faster speeds
A72-36915

Effects of noise and illumination on human motor performance
[AD-739474] N72-27095

Reliability of complex tracking task performed concurrently with other tasks or tracking alone condition
[FAA-AM-72-21] N72-27105

SENSORY PERCEPTION

Stimulus durations and individual differences approach for monitoring performance across sense modes
[AD-737735] N72-27089

Response time to vibrotactile stimulus in relation to signal amplitude and frequency variation
[AD-739433] N72-27139

SENSORY STIMULATION

Behavioral properties of somatosensory-motor interhemispheric transfer.
A72-35463
Response time to vibrotactile stimulus in relation to signal amplitude and frequency variation
[AD-739433] N72-27139

SERVO MECHANISMS

Servo action in human voluntary movement.
A72-36999

SHAPES

Meaningful shape coding for aircraft switch knobs.
A72-35944

SHELTERS

Response of human subjects to reduced levels of water consumption under simulated civil defense shelter conditions
[AD-738562] N72-26076

Design of auxiliary survival shelter as portable life support system in mines
N72-27115

SHOCK LOADS

Nonlinear deformation of intervertebral discs in human spine when subjected to shock loads involving axial compressive impact
N72-26857

SHOCK WAVES

Gas dynamics and chemistry of lightning-produced shock waves /thunder/ in postulated primordial reducing atmosphere, noting amino acid production
A72-36443

Biological effects of material transmitted shock waves on miniature pigs
[DLR-FB-72-13] N72-26059

SIGNAL DETECTION

Detection and recognition of colored signal lights.

SIGNAL PROCESSING

Interactive graphics for structural languages and biological waveform analysis, using special purpose computers
[AD-739258] N72-27135

SILICON RADIATION DETECTORS

Needle type solid state detectors for in vivo measurement of tracer activity.
A72-37194

Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds.
A72-37195

SIMULATED ALTITUDE

Functional development of the altitude convulsion mechanism in mice and rabbits /Research note/.
A72-36445

SKIN TEMPERATURE (BIOLOGY)

Heat, noise and vibration stress combined effects on skin and rectal temperature, heart rate, weight loss and biochemical urinalysis
A72-34551

Skin temperatures in warm environments and the control of sweat evaporation.
A72-35969

SKYLAB PROGRAM

Modified Apollo portable life support system for Skylab astronauts
N72-27117

SLEEP

REM period functional maintenance of coordinated eye movement facilitation and binocular depth perception accuracy following sleep
A72-35462

EEG investigation of circadian variations in qualitative and quantitative RNA content in human leukocytes, noting changes during sleep
A72-36624

Sleep patterns of human adaptation to Antarctic life
N72-26067

SOCIAL FACTORS

Social survey of annoyance caused by aircraft and road traffic noise
[TT-7204] N72-26082

SODIUM

Active transport of Na and K ions and reaction mechanism for ATP-ase
[NLL-RTS-6898] N72-27075

SOLAR PROTONS

A new model for estimating space proton dose to body organs.
A72-35354

SOLID PROPELLANTS

The effects of various cure cycles upon the viability of *Bacillus subtilis* var. *niger* spores within solid propellant.
A72-36437

SORBENTS

Spacecraft trace contaminant control system with presorbents and postsorbents for catalytic oxidizer
[NASA-CR-2027] N72-26079

SPACE ENVIRONMENT SIMULATION

Results of studies on microorganisms with direct bearing on space biology
[NASA-TT-P-14307] N72-27081

SPACE FLIGHT STRESS

Space flight effects on *Chlorella* cell survival and autability in Zond automatic stations
A72-35278

Soyuz 5 satellite vehicle space flight factors effect on *Chlorella* cells, investigating survival rates and autability
A72-35279

Chromosome aberrations and germination speedup in Soyuz 5 carried barley seeds, noting stimulating effect by preflight ethylenimine treatment
A72-35280

SPACE FLIGHT TRAINING

Training of cosmonauts for prolonged space flight
[JPRS-56181] N72-26081

SPACE PERCEPTION

Visual depth perception response functions for sine and square wave modulated binocular parallax
A72-34293

Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination.

SPACE STATIONS

SUBJECT INDEX

- REM period functional maintenance of coordinated eye movement facilitation and binocular depth perception accuracy following sleep A72-34879
- Peripheral contrast thresholds for moving images. A72-35462
- The relative importance of contrast and motion in visual detection. A72-35688
- Congruent and spurious motion in the learning and performance of a compensatory tracking task. A72-35689
- The tracking of targets located outside of Panum's area. A72-35692
- Effect of selective adaptation on detection of simple and compound parafoveal stimuli. A72-35916
- Optokinetic thresholds in the normal monkey. A72-36607
- Vergence eye movements to pairs of disparity stimuli with shape selection cues. A72-36610
- Division and orientation in the vertical-horizontal illusion. A72-36612
- SPACE STATIONS** A72-36913
- Habitability factors in a rotating space station. A72-36436
- SPACE SUITS**
- Automatic controller of liquid cooled space suit using human sweat rate as input signal N72-27125
- SPACECRAFT CONTAMINATION**
- Spacecraft trace contaminant control system with presorbors and postsorbors for catalytic oxidizer [NASA-CR-2027] N72-26079
- SPACECRAFT DOCKING**
- Simulation and training for spacecraft docking N72-27882
- SPACECRAFT ENVIRONMENTS**
- Soyuz 5 satellite vehicle space flight factors effect on *Chlorella* cells, investigating survival rates and mutability A72-35279
- Habitability factors in a rotating space station. A72-36436
- SPACECRAFT STERILIZATION**
- The effects of various cure cycles upon the viability of *Bacillus subtilis* var. niger spores within solid propellant. A72-36437
- A stochastic bioburden model for spacecraft sterilization. A72-36442
- SPINE**
- Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with special reference to spinal fractures. A72-34556
- Nonlinear deformation of intervertebral discs in human spine when subjected to shock loads involving axial compressive impact N72-26857
- SPORES**
- The effects of various cure cycles upon the viability of *Bacillus subtilis* var. niger spores within solid propellant. A72-36437
- Thermal activation and relative humidity effects on spore pregermination [NASA-CR-127525] N72-27077
- STAINING**
- The distribution of the long wave photoreceptors in the compound eye of the honey bee as revealed by selective osmic staining. A72-34877
- STANDARDS**
- Continuous flow general aviation oxygen masks. [SAE AS 1224] A72-36536
- STAPHYLOCOCCUS**
- Viability of staphylococci isolated from humans subjected to long term isolation in pressurized cabins [NLL-RTS-7117] N72-27074
- STEADY STATE**
- Regression analysis for steady state N₂ inequality in O₂ consumption calculations.
- STEREOSCOPIC VISION** A72-34542
- Russian book - Eye movements as the basis of spatial vision and as a model of behavior A72-35459
- On the apparent orbit of the Pulfrich pendulum. A72-36608
- STOCHASTIC PROCESSES**
- A stochastic bioburden model for spacecraft sterilization. A72-36442
- STOPPING POWER**
- The influence of molecular binding on the stopping power of alpha particles in hydrocarbons. A72-37193
- STRESS (BIOLOGY)**
- Lipid composition of growing and starving cells of *Arthrobacter crystallopoietes*. A72-35835
- STRESS (PHYSIOLOGY)**
- Heat, noise and vibration stress combined effects on skin and rectal temperature, heart rate, weight loss and biochemical urinalysis A72-34551
- STRESS (PSYCHOLOGY)**
- Increase in skeletal muscle performance during emotional stress in man. A72-34942
- STRUCTURAL DESIGN**
- Simulation and design of breathing metabolic simulator N72-27129
- SUBMERGING**
- Hemodynamic changes in man during immersion with the head above water. A72-34543
- SUBSTRATES**
- Substrate utilization and glycolysis in the heart. A72-34977
- SUBZERO TEMPERATURE**
- Inflatable, thermally insulative emergency survival suit for subzero weather N72-27132
- SUCROSE**
- Influence of hyperosmolality on left ventricular stiffness. A72-34727
- SUPERSONIC AIRCRAFT**
- Active dosimetry for protection and control of cosmic rays in supersonic aircraft N72-26047
- SURVEYOR 3 LUNAR PROBE**
- Microbial analysis of television camera retrieved from Surveyor 3 spacecraft N72-26768
- SURVIVAL**
- Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATPase activity of rat tissue microsomes. A72-34546
- Stress and adaptation responses to repeated acute acceleration. A72-34729
- SURVIVAL EQUIPMENT**
- Medical and technical aspects of rescue and survival of astronauts in high mountain and mountainous remote areas. A72-34434
- Some aspects of survival and rescue of astronauts in polar regions. A72-34435
- Conference on portable life support systems for human protection [NASA-SP-302] N72-27106
- Inflatable, thermally insulative emergency survival suit for subzero weather N72-27132
- SWEAT**
- Skin temperatures in warm environments and the control of sweat evaporation. A72-35969
- Automatic controller of liquid cooled space suit using human sweat rate as input signal N72-27125
- SWINE**
- Pigs role as ideal experimental animal in human biomedical research, discussing investigations to emphasize similarities

Biological effects of material transmitted shock waves on miniature pigs [DLR-FB-72-13] N72-26059

SYSTEMS ENGINEERING

Automated constant cuff pressure system to remotely determine average systolic and diastolic blood pressure in man [AD-738832] N72-26089

Bioelectric system for control of muscular activity [NRC-TT-1551] N72-27083

Design of gas mixture breathing systems for underwater diver equipment N72-27108

SYSTOLIC PRESSURE

Automated constant cuff-pressure system to measure average systolic and diastolic blood pressure in man. A72-34298

T

TACHISTOSCOPES

Perception of tachistoscopic binary patterns, examining reproduction accuracy with respect to pattern length and fixation and end-segregation reference points A72-36914

TACTILE DISCRIMINATION

Visual-tactual senses conflict experimental examination, discussing vision as dominant modality A72-34249

Meaningful shape coding for aircraft switch knobs. A72-35944

TARGET RECOGNITION

Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination. A72-34879

The relative importance of contrast and motion in visual detection. A72-35689

Determining the detectability range of camouflaged targets. A72-35690

The tracking of targets located outside of Panum's area. A72-35916

Time-compressed displays for target detection. A72-35945

TASK COMPLEXITY

Rotary pursuit task practice effects on transfer of motor skill from slower to faster speeds A72-36915

Effect of noise and temperature on human performance of simple manual dexterity task [AD-739432] N72-27097

Reliability of complex tracking task performed concurrently with other tasks or tracking alone condition [FAA-AH-72-21] N72-27105

TECHNOLOGY ASSESSMENT

Development of deep sea diving technology N72-27100

TELEMETRY

Automated constant cuff pressure system to remotely determine average systolic and diastolic blood pressure in man [AD-738832] N72-26089

TEMPERATURE CONTROL

Automatic controller of liquid cooled space suit using human sweat rate as input signal N72-27125

TEMPERATURE DISTRIBUTION

Steady state and transient temperature distributions in human thigh covered with cooling pad [NASA-CR-127523] N72-27084

TEMPERATURE EFFECTS

Visible and invisible nonionizing radiation produced human injuries, considering visual and retinal effects and induced thermal stresses A72-34300

Thermoregulation during positive and negative work at different environmental temperatures. A72-36559

Effect of noise and temperature on human performance of simple manual dexterity task A72-34897

[AD-739432] N72-27097

TEMPERATURE MEASUREMENT

Thermal relationship between tympanic membrane and hypothalamus in conscious cat and monkey. A72-34344

Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution A72-37196

TEMPERATURE SENSORS

Clinical IR thermography with Thermovision camera for body temperature discontinuity detection, discussing image resolution A72-37196

THERMAL ENVIRONMENTS

Optimal temperature control for microbial inactivation by composite environment of heat and gamma radiation, using quadratic technique A72-36313

Thermal activation and relative humidity effects on spore pregermination [NASA-CR-127525] N72-27077

THERMAL INSULATION

Diving suit and heat element combinations for thermal protection of underwater divers N72-27120

Performance of liquid cooled garment system inside pressure suit of pilot N72-27121

THERMAL PROTECTION

Carbon dioxide- and thermal-control in regenerative life support system for extravehicular human protection during advanced space missions N72-27114

THERMOREGULATION

Hemodynamic thermoregulatory and sympathoadrenal responses to heat acclimatization in man during supine and upright position exercise A72-35963

Skin temperatures in warm environments and the control of sweat evaporation. A72-35969

Thermoregulation during positive and negative work at different environmental temperatures. A72-36559

Neck cooling collar for improved thermal comfort in hot weather N72-27126

Simulation and design of breathing metabolic simulator N72-27129

Inflatable, thermally insulative emergency survival suit for subzero weather N72-27132

THIGH

Steady state and transient temperature distributions in human thigh covered with cooling pad [NASA-CR-127523] N72-27084

THRESHOLDS (PERCEPTION)

Peripheral contrast thresholds for moving images. A72-35688

An analytical description of the line element in the zone-fluctuation model of colour vision. I, II. A72-36606

Optokinetic thresholds in the normal monkey. A72-36610

Novelty, recency and frequency effects on visual recognition and pseudo-recognition thresholds. A72-36909

THUNDERSTORMS

Gas dynamics and chemistry of lightning-produced shock waves /thunder/ in postulated primordial reducing atmosphere, noting amino acid production A72-36443

THYROID GLAND

Thyroidal influence on myocardial changes induced by simulated high altitude. A72-34730

Existence of hypocalcemic factor in human thyroids [NASA-TT-F-14341] N72-27079

TIME CONSTANT

Relaxation phenomena in the biological carbon cycle under conditions of variable atmospheric CO₂-content. A72-34897

TIME DISCRIMINATION

SUBJECT INDEX

TIME DISCRIMINATION

Non-monotonicity of temporal recognition of brief duration.

A72-36912

TIME LAG

On the apparent orbit of the Pulfrich pendulum.

A72-36608

TISSUES (BIOLOGY)

Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATP-ase activity of rat tissue microsomes.

A72-34546

Magnetic field effects in enzymes, tissue respiration and some metabolism characteristics of an intact organism

A72-35003

New data on physiological adaptations to arid zones

A72-35021

Fluid transfer between blood and tissues during exercise.

A72-36560

Dynamics of dissolution of gas bubbles or pockets in tissues.

A72-37027

Relative biological effects of heavy cosmic ray ions on living tissue

N72-26049

TOLERANCES (PHYSIOLOGY)

Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system.

A72-35397

TOXIC HAZARDS

Cholinesterase methods for assaying pesticide poisoning in blood of aerial applicator personnel [FAA-AM-72-12]

N72-27080

TOXICOLOGY

A note on the biological activity of the noble gas compound xenon trioxide.

A72-36444

TRACE CONTAMINANTS

Spacecraft trace contaminant control system with presorbers and postsorbers for catalytic oxidizer [NASA-CR-2027]

N72-26079

TRACKING (POSITION)

Human operator errors in performing audio-video and audio only tracking tasks

N72-26078

Reliability of complex tracking task performed concurrently with other tasks or tracking alone condition

N72-27105

TRANQUILIZERS

The effect of chlordiazepoxide on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man.

A72-35915

TRANSFER FUNCTIONS

The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in Rana esculenta.

A72-34883

TRANSFER OF TRAINING

Exercise capacity in a population of domestic fowl - Effects of selection and training.

A72-34726

Rotary pursuit task practice effects on transfer of motor skill from slower to faster speeds

A72-36915

TRANSFUSION

Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade.

A72-34445

TRANSIENT RESPONSE

Evidence for the role of the transient neural 'off-response' in perception of light decrement - A psychophysical test derived from neuronal data in the cat.

A72-34884

TRANSPORT PROPERTIES

Active transport of Na and K ions and reaction mechanism for ATP-ase [NLL-BTS-6898]

N72-27075

TRAPPED PARTICLES

Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in

the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea.

A72-35761

TUMORS

Effect of a magnetic field on experimental tumors /direct and via nervous system/

A72-35011

Brain tumors in irradiated monkeys.

A72-35647

U

U.S.S.R. SPACE PROGRAM

Training of cosmonauts for prolonged space flight [JPRS-56181]

N72-26081

ULTRASONIC TESTS

Changes of the mitral echocardiogram with ageing and the influence of atherosclerotic risk factors.

A72-37031

UNDERWATER BREATHING APPARATUS

Design of gas mixture breathing systems for underwater diver equipment

N72-27108

Design of deep sea heavy duty diving equipment for salvage divers

N72-27118

Performance of closed circuit mixed gas underwater breathing apparatus

N72-27119

UNDERWATER ENGINEERING

Development of deep sea diving technology

N72-27100

URBAN TRANSPORTATION

Social survey of annoyance caused by aircraft and road traffic noise [TT-7204]

N72-26082

URINALYSIS

Heat, noise and vibration stress combined effects on skin and rectal temperature, heart rate, weight loss and biochemical urinalysis

A72-34551

URINATION

Interrelation of interoceptors and exteroceptors in the process of urination and defecation reflex act maturation in ontogeny

A72-35022

V

VACUUM CHAMBERS

Life support system for rescue crew in altitude chamber tests

N72-27133

VASCULAR SYSTEM

Vasopressin /antidiuretic hormone/ role in central vascular volume and fluid balance maintenance during continuous positive pressure breathing in dogs

A72-35917

Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia.

A72-36025

Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed.

A72-36572

VASOCONSTRICTION

Vasomotor reflex locking level

A72-35025

VASODILATION

Vasomotor reflex locking level

A72-35025

Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man

A72-36799

VEGETATION

Bibliography of simulation models for vegetation [NASA-CR-127426]

N72-27082

VERTICAL PERCEPTION

Division and orientation in the vertical-horizontal illusion.

A72-36913

VERTIGO

Obedience to rotation-indicating visual displays as a function of confidence in the displays.

A72-35943

VESTIBULAR TESTS

Vestibular behavior of fish during diminished g-force and weightlessness.

- Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34549
- Physical models for visual - vestibular interactions in simulating human nystagmic eye movements [AD-737795] A72-34554 N72-27090
- Tests of broadband high intensity noise on human equilibrium [AD-737826] N72-27093
- Vestibular-ocular counterroll reflex for determining vestibular response dynamics of monkeys to acceleration [AD-737828] N72-27094
- VIABILITY**
- The effects of various cure cycles upon the viability of *Bacillus subtilis* var. niger spores within solid propellant. A72-36437
- Viability of staphylococci isolated from humans subjected to long term isolation in pressurized cabins [NLL-RTS-7117] N72-27074
- VISIBILITY**
- Effects of different alcohol dosages and display illumination on tracking performance during vestibular stimulation. A72-34554
- Determining the detectability range of camouflaged targets. A72-35690
- VISION**
- Visible and invisible nonionizing radiation produced human injuries, considering visual and retinal effects and induced thermal stresses A72-34300
- Light induced alterations in growth pattern of the avian eye. A72-34880
- VISUAL ACUITY**
- The effect of target contrast variation on dynamic visual acuity and eye movements. A72-34876
- The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in *Rana esculenta*. A72-34883
- Naval research on laser caused visual acuity decrement in monkeys and ocular injury in humans N72-26056
- VISUAL AIDS**
- Human operator errors in performing audio-video and audio only tracking tasks N72-26078
- VISUAL DISCRIMINATION**
- Visual-tactual senses conflict experimental examination, discussing vision as dominant modality A72-34249
- Effect of target-background luminance contrast on binocular depth discrimination at photopic levels of illumination. A72-34879
- An analytical description of the line element in the zone-fluctuation model of colour vision. I, II. A72-36606
- Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure A72-37220
- VISUAL FIELDS**
- The relative importance of contrast and motion in visual detection. A72-35689
- The effect of chlordiazepoxide on visual field, extraocular muscle balance, colour matching ability and hand-eye co-ordination in man. A72-35915
- Visual half-field differences in the recognition of bilaterally presented single letters and vertically spelled words. A72-36908
- Considerations in the design of an automatic visual field tester. A72-37013

VISUAL PERCEPTION

- Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions. A72-34247
- Visual depth perception response functions for sine and square wave modulated binocular parallax A72-34293
- Evidence for the role of the transient neural 'off-response' in perception of light decrement - A psychophysical test derived from neuronal data in the cat. A72-34884
- Quantitative decision criteria for identification of visual evoked responses obtained during binocular rivalry. A72-36312
- On the apparent orbit of the Pulfrich pendulum. A72-36608
- Novelty, recency and frequency effects on visual recognition and pseudo-recognition thresholds. A72-36909
- Assessment of life span age difference relations in visual perceptual tasks, taking into account maturational and generational differences A72-36910
- Effects of visual cues on the standing body sway of males and females. A72-36918
- Manipulation of projected afterimages by means of the physiological theory imposed on the observer. A72-36920
- VISUAL PHOTOMETRY**
- Colorimetric photometric matching tests, showing subject differences in parafoveal spectral sensitivity indicated by photopic curve peaks A72-34882
- VISUAL SIGNALS**
- Detection and recognition of colored signal lights. A72-35691
- VISUAL STIMULI**
- Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions. A72-34247
- Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. A72-34248
- Electroretinographic evidence for a photopic system in the rat. A72-34878
- Peripheral contrast thresholds for moving images. A72-35688
- Effect of selective adaptation on detection of simple and compound parafoveal stimuli. A72-36607
- Optokinetic thresholds in the normal monkey. A72-36610
- Model to account for visual responses to light flashes of dark adapted eye, discussing perceived brightness variation with intensity A72-36611
- Vergence eye movements to pairs of disparity stimuli with shape selection cues. A72-36612
- Hue shifts accompany phase induced modulation enhancement of sinusoidally flickering lights. A72-36613
- Visual half-field differences in the recognition of bilaterally presented single letters and vertically spelled words. A72-36908
- Non-monotonicity of temporal recognition of brief duration. A72-36912
- Division and orientation in the vertical-horizontal illusion. A72-36913
- Perception of tachistoscopic binary patterns, examining reproduction accuracy with respect to pattern length and fixation and end-segregation reference points A72-36914
- Repression-sensitization and duration of visual attention. A72-36917
- Effect of set size, age, and mode of stimulus presentation on information-processing speed.

VISUAL TASKS

- VISUAL TASKS** A72-36922
The effect of target contrast variation on dynamic visual acuity and eye movements. A72-34876
Colorimetric photometric matching tests, showing subject differences in parafoveal spectral sensitivity indicated by photopic curve peaks A72-34882
Eye movement pattern monitoring to investigate retinal afterimage role in release of pursuit movements A72-34886
Experimental tests of Voth-Mayman hypothesis of autokinesia mediation by attention distribution mechanism A72-36904
Assessment of life span age difference relations in visual perceptual tasks, taking into account maturational and generational differences A72-36910
Theoretical models for speed-accuracy tradeoff during difficult visual discrimination tasks under time pressure A72-37220
VOMITING A72-36449
Neuroinhibition in the regulation of emesis.

W

- WASTE DISPOSAL**
Pressurized tank for feeding liquid waste into processing equipment [NASA-CASE-LAR-10365-1] N72-27102
WATER
Water cooled pressure suit with regional body cooling for metabolic heat removal N72-27124
WATER BALANCE
Gas induced osmosis as factor in pulmonary homeostasis, showing differential water retention in lungs ventilated with normoxic nitrous oxide compared with air A72-35970
WATER CONSUMPTION
Influence of thermal, osmotic, and chemical stimulations on food and water intake A72-35016
Response of human subjects to reduced levels of water consumption under simulated civil defense shelter conditions [AD-738562] N72-26076
WATER VEHICLES
Portable life support system for protective fully enclosed suits of shipboard personnel N72-27111
WAVE PROPAGATION
Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model. A72-37028
WEIGHT MEASUREMENT
Construction of animal centrifuge, and relationship between discriminability of g differences and location along effective weight continuum [NASA-CR-127067] N72-26043
WEIGHTLESSNESS
Vestibular behavior of fish during diminished g -force and weightlessness. A72-34549
Russian book - Intracranial blood circulation under conditions of accelerations and weightlessness A72-35460
WEIGHTLESSNESS SIMULATION
Effects of combined 0-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*. A72-34547
WORK CAPACITY
Work capacity and physiological responses to maximum exercise in 54 year old men in relation to heart disease and cardiovascular hazard studies A72-35822
WORK-REST CYCLE
Possibilities and dangers during long working periods in space rescue.

SUBJECT INDEX

- A72-34436
Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911
Determination of optimal work-rest cycles for individuals and crews to yield high performance and maximum man machine effectiveness [AD-738916] N72-26087

X

- X RAY DENSITY MEASUREMENT**
Comparative study of two direct methods of bone mineral measurement. A72-34552
X RAY IRRADIATION
Brain tumors in irradiated monkeys. A72-35647
Neuropathological evaluation of monkeys exposed to body-alone X-radiation. A72-36439
The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters. A72-37197
XANTHINES
Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
XENON COMPOUNDS
A note on the biological activity of the noble gas compound xenon trioxide. A72-36444

Y

- YAW**
Congruent and spurious motion in the learning and performance of a compensatory tracking task. A72-35692
YEAST
Inhibitory effects of glucose on biosynthetic respiratory adaptation of protoheme by yeast [NASA-TT-P-14330] N72-26073

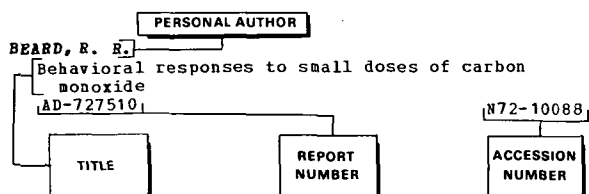
Z

- ZOND SPACE PROBES**
Space flight effects on chlorella cell survival and mutability in Zond automatic stations A72-35278

Personal Author Index

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 107)* OCTOBER 1972

Typical Personal Author Index Listing



The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

- ABBOTT, J. K.**
A comparison of serum cholinesterase methods, 2
[FAA-AM-72-12] N72-27080
- ABBRECHT, P. H.**
Digital computer simulation of human systemic
arterial pulse wave transmission - A nonlinear
model. A72-37028
- ADAMS, D. O.**
Retina - Ultrastructural alterations produced by
extremely low levels of coherent radiation. A72-35396
- ADRIANOV, O. S.**
Frontal cerebrum region and elementary mental
activity A72-36400
- AKATOV, A. K.**
Activation of biological properties of
staphylococci isolated from persons during a
prolonged stay in an airtight chamber
[NLL-RTS-7117] N72-27074
- ALBEV, L. S.**
New approach to the control of muscular activity
[NRC-TT-1551] N72-27083
Multichannel bioelectric control of the movements
of humans in normal and pathological conditions
[NRC-TT-1552] N72-27134
- ALEXANDER, J. K.**
Cardiac performance and the coronary circulation
of man in chronic hypoxia. A72-34992
- ANGELAKOS, E. T.**
Effect of posture on heat acclimatization in man.
A72-35963
- ANIKEEVA, I. D.**
Influence of space-flight factors aboard 'Zond'
automatic stations on survival and mutability of
chlorella cells. A72-35278
Influence of space-flight factors aboard Soyuz-5
satellite on chlorella cells. A72-35279
- ANISIMOV, E.**
For a rendezvous in orbit N72-27882
- ANTIPOV, V. V.**
Effect of lunar ground on radiation damage in mice
A72-35214
- ANTONOVA, A. A.**
Mechanisms regulating physiological functions
A72-35014

- ARBORELIUS, M., JR.**
Hemodynamic changes in man during immersion with
the head above water. A72-34543
- ASEATIAN, E. A.**
The role of inhibition in the fatigue phenomenon
A72-35015
- AUDET, H. P.**
Navy-developed life support systems for fully
enclosed protective suits N72-27111
- AURELL, M.**
Work capacity and physiologic responses to work -
Men born in 1913. A72-35822
- AUSTEN, D. P.**
The effect of chlorthalidone on visual field,
extraocular muscle balance, colour matching
ability and hand-eye co-ordination in man.
A72-35915
- AUSTEN, W. G.**
Non-invasive assessment of prosthetic mitral
paravalvular and intravalvular regurgitation.
A72-34221

B

- BAAN, J.**
A quantitative relationship between the H-I slope
of the head-foot BcQ and the initial
acceleration of flow in man. A72-36035
- BAKER, M. A.**
Thermal relationship between tympanic membrane and
hypothalamus in conscious cat and monkey. A72-34344
- BALDRIGHI, G.**
Vestibular behavior of fish during diminished
g-force and weightlessness. A72-34549
- BALE, R. H.**
Effects of instructions on measures of state and
trait anxiety in flight students. A72-34464
- BALLDIN, U. I.**
Hemodynamic changes in man during immersion with
the head above water. A72-34543
- BANCHERO, N.**
Effects plus Gy acceleration on blood oxygen
saturation and pleural pressure relationships in
dogs breathing first air, then liquid
fluorocarbon in a whole body water immersion
respirator [NASA-CR-127262] N72-27078
- BAR-NUN, A.**
'Thunder' - Shock waves in pre-biological organic
synthesis. A72-36443
- BARTLETT, R. G.**
Breathing metabolic simulator N72-27129
- BASS, D. E.**
Effect of posture on heat acclimatization in man.
A72-35963
- BEATRICE, E. S.**
Retina - Ultrastructural alterations produced by
extremely low levels of coherent radiation. A72-35396
- BECKER, J. A.**
Division and orientation in the
vertical-horizontal illusion. A72-36913
- BEDELL, R. B.**
Retina - Ultrastructural alterations produced by

- extremely low levels of coherent radiation.
A72-35396
- BEGGS, J. C.
Apollo PLSS: Environmental control of the
smallest manned space vehicle
N72-27109
- BEHRENBECK, D. W.
Studies of the influence of theophylline on the
vasodilating action of different medications on
the cerebral and coronary circulation of man
A72-36799
- BEISCHER, D. E.
Magnetic fields and man: Where do we stand today?
[NASA-CR-127049]
N72-26055
- BEHOR, D.
Natural acclimatization to work in severe heat.
A72-34550
- BENTLEY, R. A.
Tolerance to external breathing resistance with
particular reference to high inspiratory
resistance
N72-27127
- BENZING, H.
Extracellular acid-base changes in the dog
myocardium during hypoxia and local ischemia,
measured by means of glass micro-electrodes.
A72-34983
- BERCOVITZ, A. B.
Light induced alterations in growth pattern of the
avian eye.
A72-34880
- BERDINA, W. A.
Increase in skeletal muscle performance during
emotional stress in man.
A72-34942
- BERGER, R. J.
Oculomotor coordination following REM and non-REM
sleep periods.
A72-35462
- BERGHAGE, T. E.
Review and analysis of cases of decompression
sickness occurring under pressure
[AD-737700]
N72-27088
- BERGMAN, S. A., JR.
'Diving reflex' in man - Its relation to isometric
and dynamic exercise.
A72-35964
- BESCH, E. L.
Response of human subjects to reduced levels of
water consumption under simulated civil defense
shelter conditions
[AD-738562]
N72-26076
- BEZNER, J. S.
A dynamic analysis of the arm complex subjected to
an external load
[AD-739478]
N72-27096
- BIJL, G. K.
Hue shifts accompany phase induced modulation
enhancement of sinusoidally flickering lights.
A72-36613
- BILLINGS, M. P.
A new model for estimating space proton dose to
body organs.
A72-35354
- BJURE, J.
Work capacity and physiologic responses to work -
Men born in 1913.
A72-35822
- BLACKABY, J.
A liquid cooled garment temperature controller
based on sweat rate
N72-27125
- BOGACH, P. G.
Influence of thermal, osmotic, and chemical
stimulations on food and water intake
A72-35016
- BOGINICH, L. F.
The magnetic field, infection and immunity
A72-35009
- BORLAND, R. G.
Laser safety: Some considerations in the design
of a code of practice
N72-26057
- BOTTOM, C. G.
A survey into the annoyance caused by aircraft
noise and road traffic noise
[TT-7204]
N72-26082
- BOURICHON, J.
The existence and activity of thyrocalcitonin in man.
A72-34729
- [NASA-TT-F-14341]
N72-27079
- BOURNE, J. R.
Quantitative decision criteria for identification
of visual evoked responses obtained during
binocular rivalry.
A72-36312
- BOUTELIER, C.
Skin temperatures in warm environments and the
control of sweat evaporation.
A72-35969
- BOYERS, D. G.
Simulation of the human cardiovascular system - A
model with normal responses to change of
posture, blood loss, transfusion, and autonomic
blockade.
A72-34445
- BOYLEN, C. W.
Lipid composition of growing and starving cells of
Arthrobacter crystallopoietes.
A72-35835
- BRADLEY, P. D.
Scientific publications and presentations relating
to planetary quarantine. Volume 5: The 1971
supplement
[NASA-CR-127112]
N72-26074
- BRECHER, G. A.
Effects of backscatter of brief high intensity
light on physiological responses of instrument
rated pilots and non-pilots
[FAA-AM-72-8]
N72-26072
- BREWER, W. A.
The effects of various cure cycles upon the
viability of Bacillus subtilis var. niger
spores within solid propellant.
A72-36437
- BROOKS, B.
Evidence for the role of the transient neural
'off-response' in perception of light decrement
- A psychophysical test derived from neuronal
data in the cat.
A72-34884
- BROWN, B.
The effect of target contrast variation on dynamic
visual acuity and eye movements.
A72-34876
- BROWN, J. T.
Skylab astronaut life support assembly
N72-27117
- BROWN, R. D.
Analysis of the vestibulo-ocular counterroll
reflex in primates
[AD-737828]
N72-27094
- BRUECKE, P. E.
Role of the autonomic nervous system in the
hypoxic response of the pulmonary vascular bed.
A72-36572
- BUCKLEY, M. J.
Non-invasive assessment of prosthetic mitral
paravalvular and intravalvular regurgitation.
A72-34221
- BUCKY, S. P.
Effects of instructions on measures of state and
trait anxiety in flight students.
A72-34464
- BUDINGER, T. P.
Visual phenomena induced by cosmic rays and
accelerated particles
[NASA-TM-X-68460]
N72-26051
- BUHLER, F.
Medical and technical aspects of rescue and
survival of astronauts in high mountain and
mountainous remote areas.
A72-34434
- BULLARD, R. W.
Thyroidal influence on myocardial changes induced
by simulated high altitude.
A72-34730
- BUNIMOVICH, S. G.
Multichannel bioelectric control of the movements
of humans in normal and pathological conditions
[NRC-TT-1552]
N72-27134
- BURGESS, W. A.
Respiratory protective device design using control
system techniques
N72-27128
- BURTON, R. R.
Stress and adaptation responses to repeated acute
acceleration.
A72-34729

C

- CALL, H. A.
Neuropathological evaluation of monkeys exposed to
body-alone X-radiation. A72-36439
- CALUDA, H. J., JR.
A human model which optimizes pursuit tracking
N72-26077
- CAMPBELL, E. J. M.
Effect of carbon dioxide pressure level on
alveolar-arterial carbon dioxide pressure
difference during rebreathing. A72-34346
- CAMPBELL, J. E.
Ecology and thermal inactivation of microbes in
and on interplanetary space vehicle components
[NASA-CR-127525] N72-27077
- CAMPBELL, J. E.
'Diving reflex' in man - Its relation to isometric
and dynamic exercise. A72-35964
- CAPLAN, C. S.
Concurrent task practice conditions and transfer.
A72-36915
- CARDOSO, S.
Increased tolerance of leukemic mice to arabinosyl
cytosine with schedule adjusted to circadian
system. A72-35397
- CARLSON, L. A.
Myocardial lipid and carbohydrate metabolism in
fasting men during prolonged exercise. A72-34347
- Effect of nicotinic acid on myocardial metabolism
in man at rest and during exercise. A72-35968
- CARMON, A.
Behavioral properties of somatosensory-motor
interhemispheric transfer. A72-35463
- CARPENTER, R.
A flight-rated liquid-cooled garment for use
within a full-pressure suit N72-27121
- CARROLL, D.
Repression-sensitization and duration of visual
attention. A72-36917
- CARSON, M. A.
Apollo portable life support system performance
report N72-27110
- CASE, R. B.
Ion alterations during myocardial ischemia.
A72-34994
- CASEY, H. W.
Neuropathological evaluation of monkeys exposed to
body-alone X-radiation. A72-36439
- CASKEY, P. E.
Effects plus G_y acceleration on blood oxygen
saturation and pleural pressure relationships in
dogs breathing first air, then liquid
fluorocarbon in a whole body water immersion
respirator [NASA-CR-127262] N72-27078
- CAUDY, D. W.
Semiclosed-circuit atmosphere control in a
portable recompression chamber N72-27116
- CHAFFER, R. B., JR.
Neuroinhibition in the regulation of emesis.
A72-36449
- CHAMBERS, A. B.
A liquid cooled garment temperature controller
based on sweat rate N72-27125
- Effect of neck warming and cooling on thermal
comfort N72-27126
- CHAPMAN, P.
Visual phenomena induced by cosmic rays and
accelerated particles [NASA-TN-X-68460] N72-26051
- CHATO, J. C.
Steady state and transient temperature
distributions in the human thigh covered with a
A72-36448
- cooling pad
[NASA-CR-127523] N72-27084
- Removal of metabolic heat from man working in a
protective suit N72-27124
- CHEN, C. F.
Functional development of the altitude convulsion
mechanism in mice and rabbits /Research note/.
A72-36445
- CHILES, W. D.
Methodology in the measurement of complex human
performance: Two-dimensional compensatory
tracking [FAA-AH-72-21] N72-27105
- CHISOLM, G. M.
Plasma proteins, oxygen transport and
atherosclerosis. A72-37030
- CHOHAN, I. S.
Blood coagulation changes at high altitude
predisposing to pulmonary hypertension. A72-34222
- CHOUNGOURIAN, A.
Extraversion, neuroticism, and color preferences.
A72-36903
- CHRISTIE, B.
Stimulus complexity and the EEG - Differential
effects of the number and the variety of display
elements. A72-34248
- CHUBB, G. P.
Modification of the Siegel-Wolf operator simulator
model for on-line experimentation
[AD-737798] N72-27138
- CISSIK, J. H.
Regression analysis for steady state N₂ inequality
in O₂ consumption calculations. A72-34542
- CLARK, D. A.
Effects of in vivo inhalation of 100% oxygen at
reduced pressure on serum and red cell lipids.
A72-34553
- CLARK, F. C.
Discrimination of gravitational stimuli
[NASA-CR-127067] N72-26043
- CLARKSON, D. P.
Thermal neutral temperature of rats in
helium-oxygen, argon-oxygen, and air. A72-34728
- Predictability of PaO₂ in different inert
gas-oxygen environments. A72-36438
- CLAYTON, R.
Photosynthesis N72-27060
- CLELAND, B. G.
On the apparent orbit of the Pulfrich pendulum.
A72-36608
- CHIRAL, J.
Possibilities and dangers during long working
periods in space rescue. A72-34436
- COFFIN, C. L.
Portable life support for instrumentation of an
offshore platform N72-27123
- COLIN, J.
Skin temperatures in warm environments and the
control of sweat evaporation. A72-35969
- COLLINS, D. C.
Structural languages and biomedical signal
analysis using interactive graphics
[AD-739258] N72-27135
- COLLINS, W. E.
Effects of different alcohol dosages and display
illumination on tracking performance during
vestibular stimulation. A72-34554
- COOKE, J. P.
Effects of nitrogen and helium upon pulmonary
damage after rapid decompression to 2 torr.
A72-34544
- COOMBS, J. S.
On the apparent orbit of the Pulfrich pendulum.
A72-36608
- COPE, F. W.
Evidence for activated interfacial charge
transport in low-G acceleration stress.

- COPELAND, R. J.
Regenerable thermal control and carbon dioxide control techniques for use in advanced extravehicular protective systems
N72-27114
- CORRAO, P.
The position of eardrum rupture and hearing loss in the scale of injuries from nuclear blast
[AD-737643]
N72-27092
- CRAIG, K. D.
Verbal reports of pain without noxious stimulation.
A72-36916
- CRANE, C. R.
A comparison of serum cholinesterase methods, 2
[FAA-AM-72-12]
N72-27080
- CRAWFORD, R. G.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-127525]
N72-27077
- CREIGHTON, D. E.
Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions.
A72-34247
- CREIGHTON, R. A.
A heart beat accumulator for research in exercise physiology
[AD-738882]
N72-26088
- CREIGHTON, T. D.
Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions.
A72-34247
- CRONIN, L. E.
Remote sensing and extractable biological resources
N72-26278
- CROUTE, F.
Evidence on the effect of natural ionizing radiation on biological stimulation
N72-26050
- CROXSON, M. S.
Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amiloride.
A72-34932
- CURTIS, D. L.
An emergency survival suit
N72-27132
- CUTHBERTSON, J. G.
Simulation of the human cardiovascular system - A model with normal responses to change of posture, blood loss, transfusion, and autonomic blockade.
A72-34445
- D**
- DANESI, W. A.
Advanced deep sea diving equipment
N72-27118
- DANIELS, E.
Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects.
A72-36569
- DAVIDOV, B. I.
Effect of lunar ground on radiation damage in mice
A72-35214
- DELAFIELD, G.
Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements.
A72-34248
- DELANAVE, R. P.
First results of passive dosimetric cosmic radiation effects onboard a prototype of the Concorde 001 supersonic transport
N72-26052
- DELTOUR, G.
Some considerations on the difficulties of dosimetric evaluation and cosmic radiation injuries
N72-26049
- DERHAN, U.
Changes of the mitral echocardiogram with ageing and the influence of atherosclerotic risk factors.
A72-37031
- DERYAPA, N. R.
Acclimatization and human pathology in Antarctica
N72-26063

- Clinico-physiological characteristics of the process of acclimatization of man in Antarctica
N72-26064
- DESPRES, S.
Some considerations on the difficulties of dosimetric evaluation and cosmic radiation injuries
N72-26049
- DHALLA, N. S.
Changes in energy stores in the hypoxic heart.
A72-34985
- DIETLEIN, L. F.
Comparative study of two direct methods of bone mineral measurement.
A72-34552
- DINSMORE, R. E.
Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation.
A72-34221
- DOBBS, M. B.
Hazard study of six helium-neon laser boresights
[AD-738629]
N72-27087
- DOLEZEL, V.
Possibilities and dangers during long working periods in space rescue.
A72-34436
- DORFMAN, I. A. G.
Physical phenomena occurring in living objects under the action of constant magnetic fields
A72-35002
- DOROZHKINA, L. I.
Mechanism of the biological action of a constant magnetic field
A72-35005
- DOSCHER, W. W.
Photon trapping in photosystem II of photosynthesis - The fluorescence rise curve in the presence of 3-/3,4-dichlorophenyl/-1,1-dimethylurea.
A72-35761
- DOUGLAS, W. R.
Of pigs and men and research - A review of applications and analogies of the pig, sus scrofa, in human medical research.
A72-36440
- DOWLAND, P. F.
Thermal protection of divers
N72-27120
- DUDANI, N. G.
Grouping of the causative factors in investigation of aircraft accidents attributed to pilot errors.
A72-34557
- DUDEK, R. A.
Performance, recovery, and man machine effectiveness
[AD-738916]
N72-26087
- DUFFETT, J.
Vision and touch - A reconsideration of conflict between the two senses.
A72-34249
- DUGAN, V. L.
Controlling microbial inactivation environments.
A72-36313
- DUGAS, D. J.
The relative importance of contrast and motion in visual detection.
A72-35689
- DVORAK, J.
Possibilities and dangers during long working periods in space rescue.
A72-34436
- DZENDOLET, E.
Effects of visual cues on the standing body sway of males and females.
A72-36918
- E**
- EISNER, D. A.
Developmental relationships between field independence and fixity-mobility.
A72-36906
- Life-span age differences in visual perception.
A72-36910
- EKSTROM-JODAL, B.
Work capacity and physiologic responses to work - Men born in 1913.
A72-35822

PERSONAL AUTHOR INDEX

GILL, K. M.

- ELLIS, W. L.
Surveyor 3: Bacterium isolated from lunar
retrieved television camera N72-26768
- ETAUGH, C. F.
Personality correlates of lateral eye movement and
handedness. A72-36905
- EVANS, M. J.
Cell proliferation in lungs of mice exposed to
elevated concentrations of oxygen. A72-34548

F

- FANG, H. S.
Influence of prolonged starvation on the frequency
of occurrence of decompression-induced pulmonary
hemorrhage. A72-34545
- Functional development of the altitude convulsion
mechanism in mice and rabbits /Research note/.
A72-36445
- Effects of vagotomy and increased blood pressure
on the incidence of decompression-induced
pulmonary hemorrhage. A72-36446
- FAVERO, M. S.
Microbiological sampling of returned Surveyor 3
electrical cabling N72-26769
- FEDULESOVA, M.
The influence of exogenous ATP on cardiac
metabolism in acute hypoxia. A72-34987
- FEJFAR, Z.
Metabolism of the hypoxic and ischaemic heart;
Proceedings of the Symposium, Geneva,
Switzerland, June 14-17, 1971. Part 1. A72-34976
- FERRANS, V. J.
Myocardial ultrastructure in acute and chronic
hypoxia. A72-34988
- FIFE, W. A.
Hazard study of six helium-neon laser boresights
[AD-738629] N72-27087
- FINKELSTEIN, B.
Response of human subjects to reduced levels of
water consumption under simulated civil defense
shelter conditions [AD-738562] N72-26076
- FINN, J. P.
Effect of target-background luminance contrast on
binocular depth discrimination at photopic
levels of illumination. A72-34879
- FISCHL, M. A.
Modification of the Siegel-Wolf operator simulator
model for on-line experimentation [AD-737798] N72-27138
- FITZHENRY, P.
Pilotage error in area navigation: Performance of
instrument pilots using symbolic displays
[AD-739309] N72-27085
- FOERSTEL, H.
Relaxation phenomena in the biological carbon
cycle under conditions of variable atmospheric
CO₂-content. A72-34897
- FOULDS, E. L., JR.
Effects of in vivo inhalation of 100% oxygen at
reduced pressure on serum and red cell lipids. A72-34553
- FOX, R.
Quantitative decision criteria for identification
of visual evoked responses obtained during
binocular rivalry. A72-36312
- FRANKE, E. K.
Body dynamics and ballistocardiogram. A72-36039
- PROLOV, K. V.
Method of studying the reactions of a human
operator considered as an oscillatory system to
harmonic and random vibrational action
[NASA-TT-P-14289] N72-26085
- PROST, J. D., JR.
Compressible biomedical electrode

- [NASA-CASE-MS-13648] N72-27103
- FULLER, E. W.
Active dosimetry of cosmic radiation N72-26047

G

- GAIDANAKIN, N. A.
Effect of lunar ground on radiation damage in mice
A72-35214
- GAINER, J. L.
Plasma proteins, oxygen transport and
atherosclerosis. A72-37030
- GAINER, J. V., JR.
Plasma proteins, oxygen transport and
atherosclerosis. A72-37030
- GALE, A.
Stimulus complexity and the EEG - Differential
effects of the number and the variety of display
elements. A72-34248
- GANELINA, I. E.
Clinical observations as a research method in
physiology A72-35017
- GANS, J. A.
Considerations in the design of an automatic
visual field tester. A72-37013
- GARDINIER, C. A.
A study of the effects of illumination and noise
on simple motor performance [AD-739474] N72-27095
- GARGANEV, G. P.
Pathologic-anatomic characterization of changes
induced by magnetic fields in experimental animals
A72-35008
- GARINA, K. P.
Influence of space-flight factors and ethylenimine
on barley seeds. A72-35280
- GASAWAY, D. C.
Bioacoustic noise problems during operation of
C-7A Caribou aircraft [AD-738627] N72-27086
- GASSENHEIMER, L.
In vivo incorporation of C-14/1/palmitate and
H-3/U/glucose into lung lecithin. A72-36573
- GAZE, R. M.
The visual system and 'neuronal specificity.'
A72-35070
- GERBERT, G.
Extracellular acid-base changes in the dog
myocardium during hypoxia and local ischemia,
measured by means of glass micro-electrodes.
A72-34983
- GERBEN, M. J.
Self-paced ergometer performance - Effects of
pedal resistance, motivational contingency and
inspired oxygen concentration. A72-36911
- GESSWEIN, J.
The position of eardrum rupture and hearing loss
in the scale of injuries from nuclear blast
[AD-737643] N72-27092
- GHISTA, D. M.
A human left ventricular control system model for
cardiac diagnosis. A72-37029
- GHOSH, N. C.
Effect of Acetazolamide /Diamox/ at different dose
levels on survival time of rats under acute
hypoxia and on Na⁺/K⁺-ATP-ase activity of
rat tissue microsomes. A72-34546
- GIESS, M. C.
Evidence on the effect of natural ionizing
radiation on biological stimulation N72-26050
- GILL, E. D.
Chemical evolution and the origin of life -
Bibliography supplement 1970. A72-36450
- GILL, K. M.
Visual half-field differences in the recognition
of bilaterally presented single letters and

- vertically spelled words. A72-36908
- GILMARTIN, B. A.
The effect of chlordiazepoxide on visual field,
extraocular muscle balance, colour matching
ability and hand-eye co-ordination in man. A72-35915
- GILSON, R. D.
Effects of different alcohol dosages and display
illumination on tracking performance during
vestibular stimulation. A72-34554
- GLOSTER, J.
The effects of acute hypoxia on lipid synthesis in
the rat heart. A72-34979
- GODFREY, S.
Reproducibility of indirect /CO₂/ Fick method for
calculation of cardiac output. A72-35971
- GOL'DANSKAIA, M. I.
Mechanisms regulating physiological functions A72-35014
- GOL'TSEVA, I. N.
Mechanism of the biological action of a constant
magnetic field A72-35005
- GOLDBERGER, M. E.
Restitution of function in the CNS - The
pathologic grasp in *Macaca mulatta*. A72-36977
- GOODWIN, F. H.
Apollo PLSS: Environmental control of the
smallest manned space vehicle N72-27109
- GORSHENINA, T. I.
Pathologic-anatomic characterization of changes
induced by magnetic fields in experimental animals A72-35008
- GORTON, R. L.
Response of human subjects to reduced levels of
water consumption under simulated civil defense
shelter conditions [AD-738562] N72-26076
- GRAYBIEL, A.
Ocular counterrolling measured during eight hours
of sustained body tilt [NASA-CR-127034] N72-26058
- GREEN, J. A.
A study of human performance in a rotating
environment [NASA-CR-111866] N72-27104
- GREEN, R. H.
The effects of various cure cycles upon the
viability of *Bacillus subtilis* var. *niger*
spores within solid propellant. A72-36437
- Microbiological sampling of returned Surveyor 3
electrical cabling N72-26769
- GREENLEAF, J.
Effects plus G_y acceleration on blood oxygen
saturation and pleural pressure relationships in
dogs breathing first air, then liquid
fluorocarbon in a whole body water immersion
respirator [NASA-CR-127262] N72-27078
- GREENLEAF, J. E.
Disproportional changes in hematocrit, plasma
volume, and proteins during exercise and bed rest. A72-35966
- GRENZMANN, M.
Studies of the influence of theophylline on the
vasodilating action of different medications on
the cerebral and coronary circulation of man A72-36799
- GRETHER, W. F.
Further study of combined heat, noise and
vibration stress. A72-34551
- GRIBAKIN, P. G.
The distribution of the long wave photoreceptors
in the compound eye of the honey bee as revealed
by selective osmic staining. A72-34877
- GRIFFIN, M. J.
Secondary task performance of helicopter pilots
during low-level flight [ISVR-TR-54] N72-26086
- GRIFFIN, O. G.
Tolerance to external breathing resistance with
particular reference to high inspiratory
resistance N72-27127
- Influence of facemask design on operational
performance N72-27130
- GRIGOR'EV, I. G.
Brief survey of the problems of space radiobiology
and radiation safety in space flights. A72-35376
- GRIMBY, G.
Work capacity and physiologic responses to work -
Men born in 1913. A72-35822
- GROVER, R. P.
Cardiac performance and the coronary circulation
of man in chronic hypoxia. A72-34992
- GUBAREVA, I. G.
Influence of space-flight factors aboard 'Zond'
automatic stations on survival and mutability of
chlorella cells. A72-35278
- GUEDRY, F. E., JR.
Effects of different alcohol dosages and display
illumination on tracking performance during
vestibular stimulation. A72-34554
- GUERCIO, J. G.
Congruent and spurious motion in the learning and
performance of a compensatory tracking task. A72-35692
- GUIBU, J.-D.
Skin temperatures in warm environments and the
control of sweat evaporation. A72-35969
- GUIGNARD, J. C.
Further study of combined heat, noise and
vibration stress. A72-34551
- GUREVICH, B. KH.
Eye movements as the basis of spatial vision and
as a model of behavior A72-35459
- GURFINKEL', V. S.
Multilevel motion control A72-35018
- GUTHMANN, H. E.
Determining the detectability range of camouflaged
targets. A72-35690

H

- HACKNEY, J. D.
Cell proliferation in lungs of mice exposed to
elevated concentrations of oxygen. A72-34548
- HALBERG, P.
Increased tolerance of leukemic mice to arabinosyl
cytosine with schedule adjusted to circadian
system. A72-35397
- HALCOMB, C. G.
Monitoring performance across sense modes: An
individual differences approach [AD-737735] N72-27089
- HALL, G. W.
USAF custom fit oxygen mask program. A72-34559
- HALL, J. B., JR.
Liquid waste feed system [NASA-CASE-LAR-10365-1] N72-27102
- HANSEN, O. R.
Design considerations for divers' breathing gas
systems N72-27108
- HARRIS, C. S.
Further study of combined heat, noise and
vibration stress. A72-34551
- The effects of high intensity noise on human
equilibrium [AD-737826] N72-27093
- HARRIS, P.
The effects of acute hypoxia on lipid synthesis in
the rat heart. A72-34979

- HARRISON, P. C.
Light induced alterations in growth pattern of the avian eye. A72-34880
- HARRISON, W. K.
Computer simulation of human ballistocardiogram reading. A72-36037
- HARTLEY, L. H.
Effect of posture on heat acclimatization in man. A72-35963
- HARTMAN, W. F.
Finite amplitude shock waves in intervertebral disc. N72-26857
- HATT, P. Y.
Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
- HAUS, E.
Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system. A72-35397
- HAYMAKER, W.
Brain tumors in irradiated monkeys. A72-35647
- Neuropathological evaluation of monkeys exposed to body-alone X-radiation. A72-36439
- HEADRICK, M. R.
Experimental investigation of an astronaut maneuvering scheme. A72-37026
- HEGGTVIT, H. A.
Morphological alterations in the ischaemic heart. A72-34995
- HEINLICH, P. F.
Advanced extravehicular protective systems N72-27113
- HEISTAD, D. D.
Effect of posture on heat acclimatization in man. A72-35963
- HELLWIG, H.
Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
- HENDRICKS, C. M.
Breathing metabolic simulator N72-27129
- HENSHAW, E. T.
The use of a scintillation counter to measure diagnostic X-ray tube kilovoltage, radiation exposure rates and contamination by low energy gamma emitters. A72-37197
- HERTIG, B. A.
Steady state and transient temperature distributions in the human thigh covered with a cooling pad [NASA-CR-127523] N72-27084
- Removal of metabolic heat from man working in a protective suit N72-27124
- HILGENDORF, R. L.
Detection and recognition of colored signal lights. A72-35691
- HILGER, H. H.
Studies of the influence of theophylline on the vasodilating action of different medications on the cerebral and coronary circulation of man A72-36799
- HILLS, B. A.
Gas-induced osmosis in the lung. A72-35970
- HINTERBERGER, U.
Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- HIPPENSTEELE, J. R.
Thyroidal influence on myocardial changes induced by simulated high altitude. A72-34730
- HLASTALA, M. P.
A model of fluctuating alveolar gas exchange during the respiratory cycle. A72-36571
- HOCHREIN, H.
Changes of intracellular myocardial electrolytes in experimental hypertension. A72-34984
- HOLLOMAN, G. H., JR.
Transient ventilatory response to graded hypercapnia in man. A72-35965
- HOLM, A. P.
A study of human performance in a rotating environment [NASA-CR-111866] N72-27104
- HOLMQUIST, C. O.
The Navy and the challenge of deep diving N72-27100
- HOLT-HANSEN, K.
Experienced attraction between two parallel bars. A72-36919
- HORNE, R. A.
An hypothesis concerning the mechanism of the sodium-potassium pump /Brief note/. A72-36441
- HOUDAS, Y.
Skin temperatures in warm environments and the control of sweat evaporation. A72-35969
- HOUSE, J. L.
Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911
- HUBER, C.
Evidence for the role of the transient neural 'off-response' in perception of light decrement - A psychophysical test derived from neuronal data in the cat. A72-34884
- HUNSMANN, G.
Changes of intracellular myocardial electrolytes in experimental hypertension. A72-34984
- HWANG, D. S.
Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system. A72-35397
- IAROSHEVSKII, A. IA.
Clinical observations as a research method in physiology A72-35017
- ILIN, Y. A.
The change of some aspects of the oxygen regime in the human organism during prolonged stays under extreme conditions N72-26069
- IMSHENETSKIY, A. A.
Space biology [NASA-TT-F-14307] N72-27081
- JACKSON, D. H.
Circulatory assist and ballistocardiographic studies; Proceedings of the Fifteenth Annual Meeting, Atlantic City, N.J., May 1, 1971. A72-36032
- JACQUEZ, J. A.
Hemoglobin-facilitated diffusion of oxygen - Interfacial and thickness effects. A72-36569
- JENNINGS, A. E.
Methodology in the measurement of complex human performance: Two-dimensional compensatory tracking [FAA-AM-72-21] N72-27105
- JENSEN, R. S.
Pilotage error in area navigation: Performance of instrument pilots using symbolic displays [AD-739309] N72-27085
- JOENSEN, H. D.
Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with special reference to spinal fractures. A72-34556
- Aircraft accident in the Faroe Islands in 1970 - Observations from a medical point of view, with

- special reference to spinal fractures. A72-34556
- JOHN, H. B.
Exchangeable potassium in heart disease -
Long-term effects of potassium supplements and
amiloride. A72-34932
- JOHNSON, B. E.
Obedience to rotation-indicating visual displays
as a function of confidence in the displays. A72-35943
- JOHNSON, P. H.
Analysis of vegetable seedlings grown in contact
with Apollo 14 lunar surface fines. A72-35925
- JOHNSON, R. E.
Regression analysis for steady state N2 inequality
in O2 consumption calculations. A72-34542
- JOLY, R.
Biological effects of UHF electromagnetic radiation
N72-26053
- JONES, A. E.
Electroretinographic evidence for a photopic
system in the rat. A72-34878
- JONES, H. L.
Effect of carbon dioxide pressure level on
alveolar-arterial carbon dioxide pressure
difference during rebreathing. A72-34346
- JONES, R.
Vergence eye movements to pairs of disparity
stimuli with shape selection cues. A72-36612
- JORDAN, J. P.
Thermal neutral temperature of rats in
helium-oxygen, argon-oxygen, and air. A72-34728
- Predictability of PaO2 in different inert
gas-oxygen environments. A72-36438
- JUHOS, L.
Disproportional changes in hematocrit, plasma
volume, and proteins during exercise and bed rest.
A72-35966
- JULICH, P. M.
Selected bibliography on the modeling and control
of plant processes
[NASA-CR-127426] N72-27082
- JUNKER, A. M.
Analysis of the vestibulo-ocular counterroll
reflex in primates
[AD-737828] N72-27094
- K**
- KAIJSER, L.
Myocardial lipid and carbohydrate metabolism in
fasting men during prolonged exercise. A72-34347
- Effect of nicotinic acid on myocardial metabolism
in man at rest and during exercise. A72-35968
- KAISER, R.
Passive dosimetry of cosmic radiation
N72-26048
- First results of passive dosimetric cosmic
radiation effects onboard a prototype of the
Concorde 001 supersonic transport N72-26052
- KANAZAWA, T.
Reaction mechanism of Na(plus)-K(plus) dependent
ATP-ase
[NLL-RTS-6898] N72-27075
- KANE, J. W.
Effect of carbon dioxide pressure level on
alveolar-arterial carbon dioxide pressure
difference during rebreathing. A72-34346
- KANE, T. R.
Experimental investigation of an astronaut
maneuvering scheme. A72-37026
- KARACAN, I.
Circadian variation of RNA in human leucocytes.
A72-36624
- KAS'IAN, I. I.
Intracranial blood circulation under conditions of
accelerations and weightlessness A72-35460
- KASTOR, J. A.
Non-invasive assessment of prosthetic mitral
paravalvular and intravalvular regurgitation.
A72-34221
- KAVERINA, N. V.
Pharmacological effects on the central adrenergic
regulation mechanisms of blood circulation
A72-35019
- KAZEMI, H.
Role of the autonomic nervous system in the
hypoxic response of the pulmonary vascular bed.
A72-36572
- KEATING, H. J.
The visual system and 'neuronal specificity.'
A72-35070
- KELLER, H.
The central division of radiation protection
[JUL-787-ST] N72-26075
- KERR, K. E.
Vergence eye movements to pairs of disparity
stimuli with shape selection cues. A72-36612
- KERR, L. G.
Effect of selective adaptation on detection of
simple and compound parafoveal stimuli. A72-36607
- KHAUTIN, V. M.
Vasomotor reflex locking level
A72-35025
- KHOLODOV, I. A.
Effect of magnetic fields on biological objects
A72-35001
- Effect of a magnetic field on the nervous system
A72-35010
- KIRK, E. S.
Effects of hypoxia and ischemia on myocardial
contraction - Alterations in the time course of
force and ischemia-dependent inhomogeneity of
contractility. A72-34996
- KIRK, J. H.
Neuropathological evaluation of monkeys exposed to
body-alone X-radiation. A72-36439
- Body weight decreases in some proton exposed
primates. A72-36447
- KLEITKE, B.
Myocardial protein synthesis in acute myocardial
hypoxia and ischemia. A72-34980
- KNITTEL, M. D.
Microbiological sampling of returned Surveyor 3
electrical cabling
N72-26769
- KOESTLER, A. G.
Apparatus for programmed oral administration of
drugs to large primates in altered environments.
A72-36921
- KOGAN, A. B.
Mechanism of the biological action of a constant
magnetic field
A72-35005
- KOHLER, W. C.
Circadian variation of RNA in human leucocytes.
A72-36624
- KOK, B.
Photon trapping in photosystem II of
photosynthesis - The fluorescence rise curve in
the presence of
3-/3,4-dichlorophenyl/-1,1-dimethylurea.
A72-35761
- KOLENKO, O. L.
Increase in skeletal muscle performance during
emotional stress in man. A72-34942
- KOMAROVA, S. N.
Effect of lunar ground on radiation damage in mice
A72-35214
- KOROVINA, O. V.
A study of the function of pulmonary respiration
among polar expedition members in coastal
Antarctica
N72-26070
- KOSTIN, L. L.
Lipid composition of growing and starving cells of
Arthrobacter crystallopoietes. A72-35835

KOTZ, I. M.
Increase in skeletal muscle performance during
emotional stress in man. A72-34942

KRAUSS, O.
The imaging properties of the positron camera A72-36424

KRUEGER, H.
The influence of the modulation transfer function
of the dioptric apparatus on the acuity and
contrast of the retinal image in *Rana esculenta*. A72-34883

KUCHAR, H. R.
Fluid dynamics in flexible tubes: An application
to the study of the pulmonary circulation
[NASA-CR-127111] N72-26044

KUEHL, J. P. W.
Increased tolerance of leukemic mice to arabinosyl
cytosine with schedule adjusted to circadian
system. A72-35397

KUTCHAI, H.
Hemoglobin-facilitated diffusion of oxygen -
Interfacial and thickness effects. A72-36569

KUZNETZOV, A. P.
Increase in skeletal muscle performance during
emotional stress in man. A72-34942

KVAKINA, E. B.
Effect of a magnetic field on experimental tumors
/direct and via nervous system/ A72-35011

L

L'VOVA, T. S.
Effect of lunar ground on radiation damage in mice A72-35214

LABBE, P.
Inhibitory effects of exogenous glucose on the
biosynthesis of protoheme by the yeast
saccharomyces cerevisiae
[NASA-TT-F-14330] N72-26073

LABUZA, T. P.
Mechanisms of deterioration of intermediate
moisture food systems [NASA-CR-114861] N72-26080

LAGUTINA, T. S.
Interrelation of interoceptors and exteroceptors
in the process of urination and defecation
reflex act maturation in ontogeny A72-35022

LAHIRI, S.
Ventilation in man during exercise at high altitude. A72-34345

LAMBERT, R. K.
Flow limitation in a collapsible tube. A72-35972

LANCASTER, M. C.
Acquired complete right bundle branch block
without overt cardiac disease Clinical and
hemodynamic study of 37 patients. A72-35821

LANGLEY, R. W.
A new model for estimating space proton dose to
body organs. A72-35354

LARKIN, E. C.
Effects of in vivo inhalation of 100% oxygen at
reduced pressure on serum and red cell lipids. A72-34553

LASSERS, B. W.
Myocardial lipid and carbohydrate metabolism in
fasting men during prolonged exercise. A72-34347

Effect of nicotinic acid on myocardial metabolism
in man at rest and during exercise. A72-35968

LAUBER, A.
Needle type solid state detectors for in vivo
measurement of tracer activity. A72-37194

Some aspects of the use of small needle-shaped
semiconductor detectors in the determination of
regional distribution and transport of labelled
compounds. A72-37195

LAUFER, A.
Acute myocardial anoxia - Anatomical changes and
their possible relation to immunological
processes. A72-34981

LEARY, G. A.
Light induced alterations in growth pattern of the
avian eye. A72-34880

LEIGHTON-WHITE, R. C.
Airline pilot incapacitation in flight. A72-34555

LEITH, J. T.
Visual phenomena induced by cosmic rays and
accelerated particles
[NASA-TN-X-68460] N72-26051

LEO, R. J.
Steady state and transient temperature
distributions in the human thigh covered with a
cooling pad
[NASA-CR-127523] N72-27084

LESCURE, W. J.
Naval Research Reviews, volume 25, no. 3 N72-27099

LEVETT, J.
Linear-nonlinear-linear transition as a function
of frequency in the retinal response to light. A72-34885

LEVICK, W. R.
On the apparent orbit of the Pulfrich pendulum. A72-36608

LEWIS, R. P.
The effects of combined environmental factors on
human performance of a manual task: Noise and
temperature
[AD-739432] N72-27097

LIANG, C. Y.
Dynamics of dissolution of gas bubbles or pockets
in tissues. A72-37027

LILJA, B.
Hemodynamic changes in man during immersion with
the head above water. A72-34543

LIN, H. S.
Influence of prolonged starvation on the frequency
of occurrence of decompression-induced pulmonary
hemorrhage. A72-34545

LIT, A.
Effect of target-background luminance contrast on
binocular depth discrimination at photopic
levels of illumination. A72-34879

LLOYD, R. P.
An altitude chamber rescue ensemble N72-27133

LOMOV, B. F.
The principles of an active operator and the
functional distribution between man and machine
[JPRS-56297] N72-26084

LONGSON, D. J.
Influence of facemask design on operational
performance N72-27130

LORENZ, W. J.
The imaging properties of the positron camera A72-36424

Mathematical methods for improving the
significance of scintigrams A72-36425

LOVE, R. G.
Tolerance to external breathing resistance with
particular reference to high inspiratory
resistance N72-27127

LUCAS, B.
Stimulus complexity and the EEG - Differential
effects of the number and the variety of display
elements. A72-34248

LUETSCHER, J. A.
Simulation of the human cardiovascular system - A
model with normal responses to change of
posture, blood loss, transfusion, and autonomic
blockade. A72-34445

LUIG, H.
The imaging properties of the positron camera A72-36424

- Mathematical methods for improving the
significance of scintigrams A72-36425
- LUNDGREN, C. E. G.
Hemodynamic changes in man during immersion with
the head above water. A72-34543
- LUNDVALL, J.
Fluid transfer between blood and tissues during
exercise. A72-36560

M

- MACEY, D. J.
Image resolution in infrared thermography. A72-37196
- MAHER, J. T.
Effect of posture on heat acclimatization in man. A72-35963
- MAIR, D.
Effects plus G_y acceleration on blood oxygen
saturation and pleural pressure relationships in
dogs breathing first air, then liquid
fluorocarbon in a whole body water immersion
respirator [NASA-CR-127262] N72-27078
- MAKAROV, B. I.
Comparative characteristics of basic forms of
climatic clothing of polar expedition members of
Vostok Station N72-26071
- MALICH, C. W.
Catalyzed sodium chlorate candles N72-27131
- MANOON, A.
Visual phenomena induced by cosmic rays and
accelerated particles [NASA-TN-X-68460] N72-26051
- MANCHESTER, J. H.
A quantitative relationship between the H-I slope
of the head-foot Bc_q and the initial
acceleration of flow in man. A72-36035
- MARKS, L. E.
Visual brightness - Some applications of a model. A72-36611
- MARSDEN, C. D.
Servo action in human voluntary movement. A72-36999
- MARTIN, F. E.
A chlorate candle/lithium hydroxide personal
breathing apparatus N72-27112
- MARTIN, L. G.
Thyroidal influence on myocardial changes induced
by simulated high altitude. A72-34730
- MASSING, G. K.
Acquired complete right bundle branch block
without overt cardiac disease Clinical and
hemodynamic study of 37 patients. A72-35821
- MASSOP, R. W.
Electroretinographic evidence for a photopic
system in the rat. A72-34878
- MATUSOV, A. L.
Medical investigations during Arctic and Antarctic
expeditions [JPRS-56225] N72-26062
- Acclimatization and human pathology in Antarctica N72-26063
- MCDONNELL, P. M.
Vision and touch - A reconsideration of conflict
between the two senses. A72-34249
- MCGINLEY, H.
Experimenter-expectancy phenomenon - Experience of
E, mechanical vs manual stimulus presentation
and IQ vs success-failure judgments. A72-36907
- MCGINLEY, P.
Experimenter-expectancy phenomenon - Experience of
E, mechanical vs manual stimulus presentation
and IQ vs success-failure judgments. A72-36907

- MCKEEVER, W. P.
Visual half-field differences in the recognition
of bilaterally presented single letters and
vertically spelled words. A72-36908
- MCHALL, P. E., JR.
Response of human subjects to reduced levels of
water consumption under simulated civil defense
shelter conditions [AD-738562] N72-26076
- MEDER, H. G.
Mathematical methods for improving the
significance of scintigrams A72-36425
- MEERHAN, J. P.
Thermal relationship between tympanic membrane and
hypothalamus in conscious cat and monkey. A72-34344
- MEERSON, P. Z.
Role of the synthesis of nucleic acids and
proteins in the adaptation of the organism to
altitude hypoxia. A72-34990
- MEISEL, W. S.
Structural languages and biomedical signal
analysis using interactive graphics [AD-739258] N72-27135
- MELLANDER, S.
Fluid transfer between blood and tissues during
exercise. A72-36560
- MERKULOVA, O. S.
New experimental data on the morpho-physiological
analysis of the adaptation phenomenon in the
somatic reflex arch A72-35023
- MERTON, P. A.
Servo action in human voluntary movement. A72-36999
- MICHALSKI, V. A.
Non-monotonicity of temporal recognition of brief
duration. A72-36912
- MIEBLE, W.
Modification of the Siegel-Wolf operator simulator
model for on-line experimentation [AD-737798] N72-27138
- MILHAUD, G.
The existence and activity of thyrocalcitonin in man
[NASA-TT-F-14341] N72-27079
- MILHORN, H. T., JR.
Transient ventilatory response to graded
hypercapnia in man. A72-35965
- MILLEDGE, J. S.
Ventilation in man during exercise at high altitude. A72-34345
- MILLER, E. F., II
Ocular counterrolling measured during eight hours
of sustained body tilt [NASA-CR-127034] N72-26058
- MILLER, W. H.
Fly colour vision. A72-36609
- MILWEE, W. I., JR.
Operation and testing of Mark 10 Mod 3 underwater
breathing apparatus N72-27119
- MIQUEL, J.
Brain tumors in irradiated monkeys. A72-35647
- MITCHELL, F. J.
Surveyor 3: Bacterium isolated from lunar
retrieved television camera N72-26768
- MITCHELL, J. H.
Influence of hyperosmolality on left ventricular
stiffness. A72-34727
- MITHOEFFER, J. C.
Pulmonary gas exchange in Andean natives at high
altitude. A72-36570
- MITHOEFFER, M. C.
Pulmonary gas exchange in Andean natives at high
altitude. A72-36570
- MO, S. S.
Non-monotonicity of temporal recognition of brief

- duration. A72-36912
- MOLODKINA, L. N.
Frontal cerebrum region and elementary mental activity A72-36400
- MONTE, P. M.
Effect of reference points and masking on tachistoscopic pattern perception. A72-36914
- MOORE, H.
Development and results of freeze-etching techniques A72-36829
- MORAN, W. H., JR.
CPPB and vasopressin secretion. A72-35917
- MORAVEC, J.
Acute hypoxia of the myocardium - Ultrastructural changes. A72-34982
- MORET, P.
Metabolism of the hypoxic and ischaemic heart; Proceedings of the Symposium, Geneva, Switzerland, June 14-17, 1971. Part 1. A72-34976
- MORET, P. R.
Myocardial metabolic changes in chronic hypoxia. A72-34989
- MORISON, W. B.
Breathing metabolic simulator N72-27129
- MORSE, J. T.
Exercise capacity in a population of domestic fowl - Effects of selection and training. A72-34726
- MORTON, H. B.
Servo action in human voluntary movement. A72-36999
- MOSER, E. A.
The influence of the modulation transfer function of the dioptric apparatus on the acuity and contrast of the retinal image in *Rana esculenta*. A72-34883
- MOSKALENKO, I. U. E.
Intracranial blood circulation under conditions of accelerations and weightlessness A72-35460
- MOUKHTAR, M. S.
The existence and activity of thyrocalcitonin in man [NASA-TT-F-14341] N72-27079
- MUIR, D. C. F.
Tolerance to external breathing resistance with particular reference to high inspiratory resistance N72-27127
- MULL, H. M.
Portable life support for instrumentation of an offshore platform N72-27123
- MUNDTH, E.
Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation. A72-34221
- MUNN, M.
Recent research applicable to the design of electronic displays. A72-36902
- MURAN, D.
Behavioral properties of somatosensory-motor interhemispheric transfer. A72-35463
- MURRAY, R.
Experimenter-expectancy phenomenon - Experience of E, mechanical vs manual stimulus presentation and IQ vs success-failure judgments. A72-36907

N

- NAGARAJA RAO, B. K.
Secondary task performance of helicopter pilots during low-level flight [ISVR-TR-54] N72-26086
- NEBBON, B. W.
Regenerable thermal control and carbon dioxide control techniques for use in advanced extravehicular protective systems N72-27114

- NEUTZE, J. M.
Exchangeable potassium in heart disease - Long-term effects of potassium supplements and amloride. A72-34932
- NEWSON, B. D.
Habitability factors in a rotating space station. A72-36436
- NIELSEN, B.
Thermoregulation during positive and negative work at different environmental temperatures. A72-36559
- NIELSEN, S. L.
Thermoregulation during positive and negative work at different environmental temperatures. A72-36559
- NOGUES, C.
Some considerations on the difficulties of dosimetric evaluation and cosmic radiation injuries N72-26049
- NORMANN, R. A.
Gain control and contrast sensitivity in the vertebrate retina. A72-34418
- NORTON, J. C.
Effect of set size, age, and mode of stimulus presentation on information-processing speed. A72-36922
- NOVITSKII, I. U. I.
Action of a constant magnetic field on plant growth A72-35006

O

- ODLAND, L. T.
Observations on microwave hazards to USAF personnel. A72-36522
- OHLBAUM, M.
Further study of combined heat, noise and vibration stress. A72-34551
- OLCOTT, T. M.
Development of a sorber trace contaminant control system including pre- and post-sorbers for a catalytic oxidizer [NASA-CR-2027] N72-26079
- OLIVER, C.
A human left ventricular control system model for cardiac diagnosis. A72-37029
- OLIVER, M. F.
Induction of ventricular arrhythmias by elevation of arterial free fatty acids in experimental myocardial infarction. A72-34997
- OLIVER, R.
Image resolution in infrared thermography. A72-37196
- OLSON, R. E.
Changes in energy stores in the hypoxic heart. A72-34985
- ONNEN, K.
Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- OPIE, L. H.
Substrate utilization and glycolysis in the heart. A72-34977
- ORNER, G. M.
Navy-developed life support systems for fully enclosed protective suits N72-27111
- OSTERTAG, H.
The imaging properties of the positron camera A72-36424

P

- PAIK, W. W.
The effects of various cure cycles upon the viability of *Bacillus subtilis* var. *niger* spores within solid propellant. A72-36437
- PALMER, D. A.
Two types of parafoveal spectral sensitivity. A72-34882
- PARANONOV, Y. A.
The dynamics of sleep of polar expedition members

- of the Severnyy Polyus-15 (North Pole drifting research station) A72-26067
- PARCHINSKAYA, I. A.
Activation of biological properties of staphylococci isolated from persons during a prolonged stay in an airtight chamber [NLL-RTS-7117] A72-27074
- PARIN, V. V.
Trophic support of cardiac activity A72-35020
- PARNLEY, W. W.
Hemodynamic effects of BASH - Body acceleration synchronous with the heartbeat. A72-36033
- PARSONS, E. F.
Role of the autonomic nervous system in the hypoxic response of the pulmonary vascular bed. A72-36572
- PATIL, K. M.
A human left ventricular control system model for cardiac diagnosis. A72-37029
- PAULY, J. E.
Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system. A72-35397
- PAVELKO, V. M.
Mechanism of the biological action of a constant magnetic field A72-35005
- PAVLOVICH, S. A.
Effects of magnetic fields on microorganisms A72-35004
- PEACOCK, J. L.
A study of human performance in a rotating environment [NASA-CR-111866] A72-27104
- PEARCE, D. G.
Release of pursuit eye movements using after-images. A72-34886
- PELLETIER, C. L.
Venous responses to stimulation of carotid chemoreceptors by hypoxia and hypercapnia. A72-36025
- PEPELKO, W. E.
Interaction of chronic hypoxia and hypercapnia upon blood gases and acid base status. A72-35166
- PERAULT, A. M.
The existence and activity of thyrocalcitonin in man [NASA-TT-P-14341] A72-27079
- PETERS, W. R.
An automated, six-channel, discrete-sample electrolyte analyzer [AD-737568] A72-27091
- PETERSEN, F. B.
Thermoregulation during positive and negative work at different environmental temperatures. A72-36559
- PETERSEN, H. E.
The relative importance of contrast and motion in visual detection. A72-35689
- PETRUKHIN, V. G.
Effect of lunar ground on radiation damage in mice A72-35214
- PFISTER, A. M.
Special biophysical problems in aerospace medicine, part 3 [AGARD-CP-95-PT-3] A72-26045
- First results of passive dosimetric cosmic radiation effects onboard a prototype of the Concorde 001 supersonic transport A72-26052
- PIPAL, M.
Possibilities and dangers during long working periods in space rescue. A72-34436
- PISTOR, P.
Mathematical methods for improving the significance of scintigrams A72-36425
- PLANEL, H.
Evidence on the effect of natural ionizing radiation on biological stimulation A72-26050
- POGGENPOL, V. S.
The change of some aspects of the oxygen regime in the human organism during prolonged stays under extreme conditions A72-26069
- PONHAMPERUMA, C.
Chemical evolution and the origin of life - Bibliography supplement 1970. A72-36450
- PONOMARENKO, V. A.
The principles of an active operator and the functional distribution between man and machine [JPRS-56297] A72-26084
- POPOVA, T. V.
Bioelectric activity of the medulla oblongata during hypothermia and bloodletting A72-35024
- POUPA, O.
Anoxic tolerance of the heart muscle in different types of chronic hypoxia. A72-34991
- POZOLOTIN, A. A.
Influence of a magnetic field on radiation-induced chromosome aberrations in plants A72-35007
- PROKHOROV, V. Y.
Activation of biological properties of staphylococci isolated from persons during a prolonged stay in an airtight chamber [NLL-RTS-7117] A72-27074
- PROPHET, W. W.
Performance measurement in helicopter training and operations. [PP-10-72] A72-35550
- PURSHOTTAN, T.
Effect of Acetazolamide /Diamox/ at different dose levels on survival time of rats under acute hypoxia and on Na⁺/K⁺-ATP-ase activity of rat tissue microsomes. A72-34546
- PYKE, S. W.
Novelty, recency and frequency effects on visual recognition and pseudo-recognition thresholds. A72-36909

R

- RABITZSCH, G.
Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- RANBAUT, P. C.
Comparative study of two direct methods of bone mineral measurement. A72-34552
- RATHER, H. IA.
Clinical observations as a research method in physiology A72-35017
- READING, R. W.
The tracking of targets located outside of Panum's area. A72-35916
- RENNERS, J. E.
Pulmonary gas exchange in Andean natives at high altitude. A72-36570
- RENNERT, O. M.
Circadian variation of RNA in human leucocytes. A72-36624
- RENO, V. R.
Magnetic fields and man: Where do we stand today? [NASA-CR-127049] A72-26055
- REPLOGLE, C. R.
Analysis of the vestibulo-ocular counterroll reflex in primates [AD-737828] A72-27094
- RETTIG, M. R.
Scientific publications and presentations relating to planetary quarantine. Volume 5: The 1971 supplement [NASA-CR-127112] A72-26074
- REYES, A. L.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components [NASA-CR-127525] A72-27077
- REYNAFARJE, B.
Effect of chronic hypoxia on the kinetics of energy transformation in heart mitochondria. A72-34993

REYNOLDS, R. E.
Detection and recognition of colored signal lights.
A72-35691

REYNOLDS, W. J.
Transient ventilatory response to graded hypercapnia in man.
A72-35965

RHOADES, R. A.
In vivo incorporation of C-14/1/palmitate and H-3/U/glucose into lung lecithin.
A72-36573

RHODE, R. P.
Techniques for measurement of centers of gravity
[AD-739439] N72-27136

RHODEN, R. A.
Some effects of CBRF3 inhalation and epinephrine challenge on certain myocardial metabolite levels
[AD-739699] N72-27098

RICHARDS, W.
Response functions for sine- and square-wave modulations of disparity.
A72-34293

RIEGEL, P. S.
Semiclosed-circuit atmosphere control in a portable recompression chamber
N72-27116

RITMAN, E. L.
Effects plus Gy acceleration on blood oxygen saturation and pleural pressure relationships in dogs breathing first air, then liquid fluorocarbon in a whole body water immersion respirator
[NASA-CR-127262] N72-27078

RIVENES, R. S.
Concurrent task practice conditions and transfer.
A72-36915

ROARK, A. L.
A stochastic bioburden model for spacecraft sterilization.
A72-36442

ROBERTS, W. C.
Myocardial ultrastructure in acute and chronic hypoxia.
A72-34988

ROBERTSON, D. G.
Effect of carbon dioxide pressure level on alveolar-arterial carbon dioxide pressure difference during rebreathing.
A72-34346

ROBILLARD, C. L.
The effects of various cure cycles upon the viability of *Bacillus subtilis* var. niger spores within solid propellant.
A72-36437

RODIONOV, I. M.
Increase in skeletal muscle performance during emotional stress in man.
A72-34942

RODRIGO, P. A.
Correlation between ergometry, ballistocardiography and coronary angiography in 267 patients.
A72-36034

ROGERS, J. G.
Peripheral contrast thresholds for moving images.
A72-35688

ROMANOVA, W. I.
Influence of space-flight factors and ethylenimine on barley seeds.
A72-35280

ROSCOE, S. W.
Meaningful shape coding for aircraft switch knobs.
A72-35944
Time-compressed displays for target detection.
A72-35945
Pilotage error in area navigation: Performance of instrument pilots using symbolic displays
[AD-739309] N72-27085

ROSE, D. J.
Pilotage error in area navigation: Performance of instrument pilots using symbolic displays
[AD-739309] N72-27085

RUBINSTEIN, L. J.
Brain tumors in irradiated monkeys.
A72-35647

RUECK, J. M.
Response of human subjects to reduced levels of water consumption under simulated civil defense

shelter conditions
[AD-738562] N72-26076

RYABININ, I. F.
Acclimatization and human pathology in Antarctica
N72-26063
A study of the function of pulmonary respiration among polar expedition members in coastal Antarctica
N72-26070

S

SAAR, E.
Natural acclimatization to work in severe heat.
A72-34550

SACHAVA, T. S.
Mechanism of the biological action of a constant magnetic field
A72-35005

SALZHAN, S. H.
Hemodynamic effects of BASH - Body acceleration synchronous with the heartbeat.
A72-36033

SAMPSON, P. A.
Further study of combined heat, noise and vibration stress.
A72-34551

SANDERS, C. A.
Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation.
A72-34221

SANDERS, D. C.
A comparison of serum cholinesterase methods, 2
[FAA-AE-72-12] N72-27080

SASS, D. J.
Effects plus Gy acceleration on blood oxygen saturation and pleural pressure relationships in dogs breathing first air, then liquid fluorocarbon in a whole body water immersion respirator
[NASA-CR-127262] N72-27078

SAVTCHEVSKO, A. P.
Increase in skeletal muscle performance during emotional stress in man.
A72-34942

SCANLAN, L. A.
Time-compressed displays for target detection.
A72-35945

SCHAAP, B. W.
Digital computer simulation of human systemic arterial pulse wave transmission - A nonlinear model.
A72-37028

SCHATTE, C. L.
Thermal neutral temperature of rats in helium-oxygen, argon-oxygen, and air.
A72-34728
Predictability of PaO₂ in different inert gas-oxygen environments.
A72-36438

SCHATZ, A.
Effects of combined O-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*.
A72-34547

SCHECHEER, E.
Acquired complete right bundle branch block without overt cardiac disease Clinical and hemodynamic study of 37 patients.
A72-35821

SCHEELE, G.
Investigations on the biological effect of shock waves transmitted through different materials
[DLR-FB-72-13] N72-26059

SCHEVING, L. E.
Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system.
A72-35397

SCHMIDLIN, P.
The imaging properties of the positron camera
A72-36424
Mathematical methods for improving the significance of scintigrams
A72-36425

SCHOLZ, R. W.
In vivo incorporation of C-14/1/palmitate and H-3/U/glucose into lung lecithin.
A72-36573

- SCHOTTELNDREIER, M. A. H. W.
Correlation between ergometry,
ballistocardiography and coronary angiography in
267 patients. A72-36034
- SCHROEDER, D. J.
Effects of different alcohol dosages and display
illumination on tracking performance during
vestibular stimulation. A72-34554
- SCHUCHHARDT, S.
The intramyocardial oxygen pressure at normoxia
and hypoxia. A72-34986
- SCHULZE, B. R.
Psychophysiological measurements applied to
maintainability evaluation of equipment design
[AD-739437] N72-27137
- SCHWAN, H. P.
Microwave radiation - Biophysical considerations
and standards criteria. A72-34299
- SCHWARTZ, A.
Electron transport and mitochondria. A72-34978
- SCHWARTZ, G. E.
Automated constant cuff-pressure system to measure
average systolic and diastolic blood pressure in
man. A72-34298
Automated constant cuff pressure system to measure
average systolic and diastolic blood pressure in
man. [AD-738832] N72-26089
- SERVANTIE, B.
Biological effects of UHF electromagnetic radiation
N72-26053
- SHALUNOV, Y. G.
Brief medico-geographic characteristics of the
course of acclimatization in members of the
Bellingsgauzen Polar Station N72-26065
- SHAPIRO, D.
Automated constant cuff-pressure system to measure
average systolic and diastolic blood pressure in
man. A72-34298
Automated constant cuff pressure system to measure
average systolic and diastolic blood pressure in
man. [AD-738832] N72-26089
- SHASTIN, I. V.
Acclimatization and human pathology in Antarctica
N72-26063
- SHATALOV, V. A.
Man in prolonged space flight
[JPRS-56181] N72-26081
- SHAUGHNESSY, J. T.
The use of a scintillation counter to measure
diagnostic X-ray tube kilovoltage, radiation
exposure rates and contamination by low energy
gamma emitters. A72-37197
- SHELBURNE, J. C.
A quantitative relationship between the R-I slope
of the head-foot Bcq and the initial
acceleration of flow in man. A72-36035
- SHEPHERD, J. T.
Venous responses to stimulation of carotid
chemoreceptors by hypoxia and hypercapnia. A72-36025
- SHIK, M. L.
Multilevel motion control A72-35018
- SHILLINGER, G. L., JR.
Vestibular behavior of fish during diminished
g-force and weightlessness. A72-34549
- SHILOV, V. M.
Activation of biological properties of
staphylococci isolated from persons during a
prolonged stay in an airtight chamber
[NLL-RTS-7117] N72-27074
- SHIOTSUKA, R. M.
Increased tolerance of leukemic mice to arabinosyl
cytosine with schedule adjusted to circadian
system. A72-35397
- SHISHLO, M. A.
Magnetic field effects in enzymes, tissue
respiration and some metabolism characteristics
of an intact organism A72-35003
- SHITZER, A.
Steady state and transient temperature
distributions in the human thigh covered with a
cooling pad [NASA-CR-127523] N72-27084
Removal of metabolic heat from man working in a
protective suit N72-27124
- SHLOSINGER, A. P.
Potential techniques and development activities in
diver suit heating N72-27122
- SHTERNBERG, I. B.
The magnetic field, infection and immunity
A72-35009
- SHTRAUKH, G. A.
Influence of space-flight factors aboard 'Zond'
automatic stations on survival and mutability of
chlorella cells. A72-35278
- SHUL'PEROV, A. A.
Methodical and methodological characteristics of a
magneto-biological experiment A72-35013
- SHVARTZ, E.
Natural acclimatization to work in severe heat.
A72-34550
- SIEGEL, A. I.
Modification of the Siegel-Wolf operator simulator
model for on-line experimentation
[AD-737798] N72-27138
- SIEGEL, S. M.
A note on the biological activity of the noble gas
compound xenon trioxide. A72-36444
- SILVERMAN, M.
Reproducibility of indirect /CO2/ Fick method for
calculation of cardiac output. A72-35971
- SIMMONS, J. B.
Predictability of PaO2 in different inert
gas-oxygen environments. A72-36438
- SINGH, I.
Blood coagulation changes at high altitude
predisposing to pulmonary hypertension. A72-34222
- SISKI, K.
The influence of exogenous ATP on cardiac
metabolism in acute hypoxia. A72-34987
- SJOERHOLM, L.
Manipulation of projected afterimages by means of
the physiological theory imposed on the observer.
A72-36920
- SKVORTSOVA, E. B.
Effect of lunar ground on radiation damage in mice
A72-35214
- SLOCUM, G. K.
Meaningful shape coding for aircraft switch knobs.
A72-35944
- SLONIM, A. D.
New data on physiological adaptations to arid zones
A72-35021
- SLYKER, C. E.
Investigation of stimulus-signal amplitude and
frequency variation in vibrotactile communication
[AD-739433] N72-27139
- SMILES, K. A.
Analysis of the vestibulo-ocular counterroll
reflex in primates [AD-737828] N72-27094
- SMITH, A. H.
Exercise capacity in a population of domestic fowl
- Effects of selection and training. A72-34726
Stress and adaptation responses to repeated acute
acceleration. A72-34729
- SMITH, C. D.
The effects of various cure cycles upon the
viability of *Bacillus subtilis* var. *niger*
spores within solid propellant. A72-36437

- SMITH, C. W.
A note on the biological activity of the noble gas compound xenon trioxide.
A72-36444
- SMITH, G. J. W.
Manipulation of projected afterimages by means of the physiological theory imposed on the observer.
A72-36920
- SMITH, M. C., JR.
Comparative study of two direct methods of bone mineral measurement.
A72-34552
- SNYDER, A. W.
Fly colour vision.
A72-36609
- SOLEILHAVOUP, J. P.
Evidence on the effect of natural ionizing radiation on biological stimulation
N72-26050
- SONNENBLICK, E. H.
Effects of hypoxia and ischemia on myocardial contraction - Alterations in the time course of force and ischemia-dependent inhomogeneity of contractility.
A72-34996
- SORENSEN, S. C.
Ventilation in man during exercise at high altitude.
A72-34345
- SOTHEEN, R. H.
Increased tolerance of leukemic mice to arabinosyl cytosine with schedule adjusted to circadian system.
A72-35397
- SOUZA, K. A.
The influence of clinostat rotation on the fertilized amphibian egg.
A72-36435
- SPIELBERGER, C. D.
Effects of instructions on measures of state and trait anxiety in flight students.
A72-34464
- STARKER, S.
Autokinesis and attention distribution.
A72-36904
- STARR, M. S.
The uptake, metabolism and release of C¹⁴-taurine by rat retina in vitro.
A72-34881
- STEINBACH, M. J.
Release of pursuit eye movements using after-images.
A72-34886
- STOCKING, R. A.
Thermal relationship between tympanic membrane and hypothalamus in conscious cat and monkey.
A72-34344
- STOEPEL, K.
Changes of intracellular myocardial electrolytes in experimental hypertension.
A72-34984
- STOBER, G. E.
Plasma proteins, oxygen transport and atherosclerosis.
A72-37030
- STREKOVA, V. IU.
Action of a constant magnetic field on plant growth
A72-35006
- STROHM, H.
Extracellular acid-base changes in the dog myocardium during hypoxia and local ischemia, measured by means of glass micro-electrodes.
A72-34983
- STURROCK, D.
Neuropathological evaluation of monkeys exposed to body-alone X-radiation.
A72-36439
- SULC, J.
Possibilities and dangers during long working periods in space rescue.
A72-34436
- SUNHITT, J. K.
Review and analysis of cases of decompression sickness occurring under pressure [AD-737700]
N72-27088
- SUN, C. W.
Changes in energy stores in the hypoxic heart.
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- SUTTON, J. G.
Advanced extravehicular protective systems
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Haemodynamic effects of BASH - Body acceleration synchronous with the heartbeat.
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Tolerance to external breathing resistance with particular reference to high inspiratory resistance
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The elusive tradeoff - Speed vs accuracy in visual discrimination tasks.
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- T**
- TANG, C. H.
Effects of vagotomy and increased blood pressure on the incidence of decompression-induced pulmonary hemorrhage.
A72-36446
- TANSY, M. F.
Neuroinhibition in the regulation of emesis.
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- TARAKANOVA, G. A.
Action of a constant magnetic field on plant growth
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'Thunder' - Shock waves in pre-biological organic synthesis.
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- TEES, R. C.
Occipital EEG activity during fluctuations of perception under stabilized image and simplified stimulus conditions.
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- TEMPLETON, G. H.
Influence of hyperosmolality on left ventricular stiffness.
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- TEPLIAKOVA, N. L.
Pathologo-anatomic characterization of changes induced by magnetic fields in experimental animals
A72-35008
- TEPPER, E. H.
Advanced extravehicular protective systems
N72-27113
- TEUCHELT, G.
Effects of combined O-G simulation and hypergravity on eggs of the nematode, *Ascaris suum*.
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- THOMAS, J. P.
Effect of selective adaptation on detection of simple and compound parafoveal stimuli.
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- THOMAS, L. J., JR.
Algorithms for selected blood acid-base and blood gas calculations.
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- THOREVSKY, V. I.
Increase in skeletal muscle performance during emotional stress in man.
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- TIBBLIN, G.
Work capacity and physiologic responses to work - Men born in 1913.
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- TINBAL, J.
Skin temperatures in warm environments and the control of sweat evaporation.
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- TIXADOR, R.
Evidence on the effect of natural ionizing radiation on biological stimulation
N72-26050
- TOBIAS, C. A.
Brief survey of the problems of space radiobiology and radiation safety in space flights.
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- Visual phenomena induced by cosmic rays and accelerated particles [NASA-TN-X-68460]
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- TONEK, I.
A new approach to Bcg simulation.
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- TOROPTSEV, I. V.
Pathologo-anatomic characterization of changes induced by magnetic fields in experimental animals
A72-35008

- TRAPEZNIKOV, V. A.
Man in the control system
[JPRS-56277] N72-26083
Man in control system N72-26194
- TREMER, J. W.
The influence of clinostat rotation on the
fertilized amphibian egg. A72-36435
- TROELSTRA, A.
Intraocular noise - Origin and characteristics. A72-36605
- TUNG, Y.
Liquid waste feed system
[NASA-CASE-LAR-10365-1] N72-27102
- TURNER, P.
The effect of chlordiazepoxide on visual field,
extraocular muscle balance, colour matching
ability and hand-eye co-ordination in man. A72-35915
- TURSKY, B.
Automated constant cuff-pressure system to measure
average systolic and diastolic blood pressure in
man. A72-34298
Automated constant cuff pressure system to measure
average systolic and diastolic blood pressure in
man
[AD-738832] N72-26089
- TYBERG, J. V.
Hemodynamic effects of BASH - Body acceleration
synchronous with the heartbeat. A72-36033
- TYLER, D. M.
Monitoring performance across sense modes: An
individual differences approach
[AD-737735] N72-27089
- TYLER, P. E.
The US Navy's program in nonionizing radiation
N72-26054
- TYSON, B. J.
Lipid composition of growing and starving cells of
Arthrobacter crystallopoietes. A72-35835
- TZSCHASCHEL, R.
The central division of radiation protection
[JUL-787-ST] N72-26075

U

- UKOLOVA, N. A.
Effect of a magnetic field on experimental tumors
/direct and via nervous system/ A72-35011

V

- VAINSHTAIN, G. B.
Intracranial blood circulation under conditions of
accelerations and weightlessness A72-35460
- VALCIUKAS, J. A.
Optokinetic thresholds in the normal monkey. A72-36610
- VAN BEAUMONT, W.
Disproportional changes in hematocrit, plasma
volume, and proteins during exercise and bed rest. A72-35966
- VANDERKOLK, R. J.
Pilote error in area navigation: Performance of
instrument pilots using symbolic displays
[AD-739309] N72-27085
- VANDOLAH, R. W.
Portable breathing apparatus for coal mines
N72-27107
- VASIL'EV, N. V.
The magnetic field, infection and immunity A72-35009
- VAULINA, E. N.
Influence of space-flight factors aboard 'Zond'
automatic stations on survival and mutability of
chlorella cells. A72-35278
Influence of space-flight factors aboard Soyuz-5
satellite on chlorella cells. A72-35279

- VENTSENOTSEV, B. B.
Acclimatization and human pathology in Antarctica
N72-26063
Psychophysiological observations of polar
expedition members in Antarctica N72-26066
The state of the blood system of polar expedition
members during wintering at Molodezh Station
N72-26068
- VERINGA, P. T.
Hue shifts accompany phase induced modulation
enhancement of sinusoidally flickering lights. A72-36613
- VIALOV, A. M.
Clinical hygienic and experimental data on
magnetic field effects under working conditions
A72-35012
- VICARS, W. M.
Effect of target-background luminance contrast on
binocular depth discrimination at photopic
levels of illumination. A72-34879
- VINJE, E. W.
Human Operator dynamics for audio compensatory
tracking N72-26078
- VISHWANATHAN, M. M.
Selected bibliography on the modeling and control
of plant processes
[NASA-CR-127426] N72-27082
- VOADEN, M. J.
The uptake, metabolism and release of
C/14/-taurine by rat retina in vitro. A72-34881
- VOGEL, J. M.
Comparative study of two direct methods of bone
mineral measurement. A72-34552
- VON BAURGARTEN, R. J.
Vestibular behavior of fish during diminished
g-force and weightlessness. A72-34549
- VONGIERKE, H. E.
The effects of high intensity noise on human
equilibrium
[AD-737826] N72-27093
- VOS, J. J.
An analytical description of the line element in
the zone-fluctuation model of colour vision. I,
II. A72-36606

W

- WAAG, W. L.
Monitoring performance across sense modes: An
individual differences approach
[AD-737735] N72-27089
- WAGNER, K.
Relaxation phenomena in the biological carbon
cycle under conditions of variable atmospheric
CO2-content. A72-34897
- WAGNER, J.
Studies of the influence of theophylline on the
vasodilating action of different medications on
the cerebral and coronary circulation of man
A72-36799
- WAGNER, P. D.
Effects of diffusion impairment on O2 and CO2 time
courses in pulmonary capillaries. A72-35967
- WAHLQVIST, M. L.
Myocardial lipid and carbohydrate metabolism in
fasting men during prolonged exercise. A72-34347
Effect of nicotinic acid on myocardial metabolism
in man at rest and during exercise. A72-35968
- WALCH, G.
Mathematical methods for improving the
significance of scintigrams A72-36425
- WALKER, J. M.
Oculomotor coordination following REM and non-REM
sleep periods. A72-35462
- WALKINSHAW, C. H.
Analysis of vegetable seedlings grown in contact
with Apollo 14 lunar surface fines. A72-35925

- Lunar horticulture. A72-35938
- WALL, R. L.
Congruent and spurious motion in the learning and performance of a compensatory tracking task. A72-35692
- WALRAVEN, P. L.
An analytical description of the line element in the zone-fluctuation model of colour vision. I, II. A72-36606
- WATERS, D. M.
A survey into the annoyance caused by aircraft noise and road traffic noise [TT-7204] N72-26082
- WATT, D. E.
The influence of molecular binding on the stopping power of alpha particles in hydrocarbons. A72-37193
- WEBSTER, R. G.
Determining the detectability range of camouflaged targets. A72-35690
- WEBBY, A. J.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components [NASA-CR-127525] N72-27077
- WEISS, S. H.
Verbal reports of pain without noxious stimulation. A72-36916
- WEISSMAN, S.
Effects of visual cues on the standing body sway of males and females. A72-36918
- WERBLIN, F. S.
Gain control and contrast sensitivity in the vertebrate retina. A72-34418
- WERTENBERGER, G. E.
Thyroidal influence on myocardial changes induced by simulated high altitude. A72-34730
- WEST, G.
Methodology in the measurement of complex human performance: Two-dimensional compensatory tracking [PAA-AM-72-21] N72-27105
- WEST, J. B.
Effects of diffusion impairment on O₂ and CO₂ time courses in pulmonary capillaries. A72-35967
- WEST, M. W.
Chemical evolution and the origin of life - Bibliography supplement 1970. A72-36450
- WESTLAKE, G. E.
An automated, six-channel, discrete-sample electrolyte analyzer [AD-737568] N72-27091
- WESTLING, H.
Fluid transfer between blood and tissues during exercise. A72-36560
- WHEELER, R.
Analysis of the vestibulo-ocular counterroll reflex in primates [AD-737828] N72-27094
- WHITE, R. M., JR.
Detection and recognition of colored signal lights. A72-35691
- WHITE, T.
Fluid transfer between blood and tissues during exercise. A72-36560
- WILDENTHAL, K.
Influence of hyperosmolality on left ventricular stiffness. A72-34727
'Diving reflex' in man - Its relation to isometric and dynamic exercise. A72-35964
- WILHELMSEN, L.
Work capacity and physiologic responses to work - Men born in 1913. A72-35822
- WILLERSON, J. T.
Non-invasive assessment of prosthetic mitral paravalvular and intravalvular regurgitation. A72-34221
- WILLIAMS, A. C., JR.
Obedience to rotation-indicating visual displays as a function of confidence in the displays. A72-35943
- WILLIAMS, B. A.
Effect of neck warming and cooling on thermal comfort N72-27126
- WILLIAMS, J. L.
Regenerable thermal control and carbon dioxide control techniques for use in advanced extravehicular protective systems N72-27114
- WILLIAMSON, J.
The influence of molecular binding on the stopping power of alpha particles in hydrocarbons. A72-37193
- WILLIGES, B. H.
Meaningful shape coding for aircraft switch knobs. A72-35944
- WILLIGES, R. C.
Time-compressed displays for target detection. A72-35945
- WILSON, F. H., JR.
Effects of in vivo inhalation of 100% oxygen at reduced pressure on serum and red cell lipids. A72-34553
- WILSON, O.
Some aspects of survival and rescue of astronauts in polar regions. A72-34435
- WILSON, T. A.
Flow limitation in a collapsible tube. A72-35972
- WINSATT, J. C.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components [NASA-CR-127525] N72-27077
- WINER, N. J.
Some preliminary observations on the correlation of the high frequency /acceleration/ direct-body ballistocardiogram with the apex cardiogram, carotid pulse and their derivatives. A72-36036
- WINN, L. E.
Liquid waste feed system [NASA-CASE-LAR-10365-1] N72-27102
- WINSHAW, P. R.
Self-paced ergometer performance - Effects of pedal resistance, motivational contingency and inspired oxygen concentration. A72-36911
- WINTER, W. R.
A flight-rated liquid-cooled garment for use within a full-pressure suit N72-27121
- WINWOOD, H.
Stimulus complexity and the EEG - Differential effects of the number and the variety of display elements. A72-34248
- WOLBARSH, H. L.
Laser safety and how to promote it N72-26056
- WOLF, J. J.
Modification of the Siegel-Wolf operator simulator model for on-line experimentation [AD-737798] N72-27138
- WOLGAST, H.
Needle type solid state detectors for in vivo measurement of tracer activity. A72-37194
Some aspects of the use of small needle-shaped semiconductor detectors in the determination of regional distribution and transport of labelled compounds. A72-37195
- WOLLENBERGER, A.
Myocardial protein synthesis in acute myocardial hypoxia and ischemia. A72-34980
- WOO, K. B.
A human left ventricular control system model for cardiac diagnosis. A72-37029
- WOOD, E. H.
Effects plus Gy acceleration on blood oxygen saturation and pleural pressure relationships in

- dogs breathing first air, then liquid
fluorocarbon in a whole body water immersion
respirator
[NASA-CR-127262] N72-27078
- WUENSCH, O.
Investigations on the biological effect of shock
waves transmitted through different materials
[DLR-FB-72-13] N72-26059
- WYDEVEN, T.
Catalyzed sodium chlorate candles N72-27131
- WYNNE, L.
Apparatus for programmed oral administration of
drugs to large primates in altered environments.
A72-36921

Y

- YANG, W.-J.
Dynamics of dissolution of gas bubbles or pockets
in tissues. A72-37027
- YANKOVICH, D.
Respiratory protective device design using control
system techniques N72-27128
- YATES, P. A.
Induction of ventricular arrhythmias by elevation
of arterial free fatty acids in experimental
myocardial infarction. A72-34997
- YATTEAU, J. D.
Experimental investigation of an astronaut
maneuvering scheme. A72-37026
- YOUNG, L. R.
Developments in modelling visual-vestibular
interactions
[AD-737795] N72-27090

Z

- ZABARA, J.
Neuroinhibition in the regulation of emesis.
A72-36449
- ZABARSAKIN, V. A.
Brief medico-geographic characteristics of the
course of acclimatization in members of the
Bellingsgauzen Polar Station N72-26065
- ZAKUSOV, V. V.
Pharmacological effects on the central adrenergic
regulation mechanisms of blood circulation
A72-35019
- ZARET, M. E.
Clinical aspects of nonionizing radiation.
A72-34300
- ZAVALOVA, N. D.
The principles of an active operator and the
functional distribution between man and machine
[JPRS-56297] N72-26084
- ZEIDIFARD, E.
Reproducibility of indirect /CO2/ Fick method for
calculation of cardiac output. A72-35971
- ZEINER, A. R.
Effects of backscatter of brief high intensity
light on physiological responses of instrument
rated pilots and non-pilots
[FAA-AM-72-8] N72-26072
- ZELLER, S. S.
A portable life support system for use in mines
N72-27115
- ZIEGELHOEFFER, A.
The influence of exogenous ATP on cardiac
metabolism in acute hypoxia. A72-34987
- ZUBIETA, G.
Pulmonary gas exchange in Andean natives at high
altitude. A72-36570

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